

JUL 6 1964

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CRPL-F 238 PART B

FOR OFFICIAL USE

PART B
SOLAR - GEOPHYSICAL DATA

ISSUED
JUNE 1964

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

SOLAR - GEOPHYSICAL DATA

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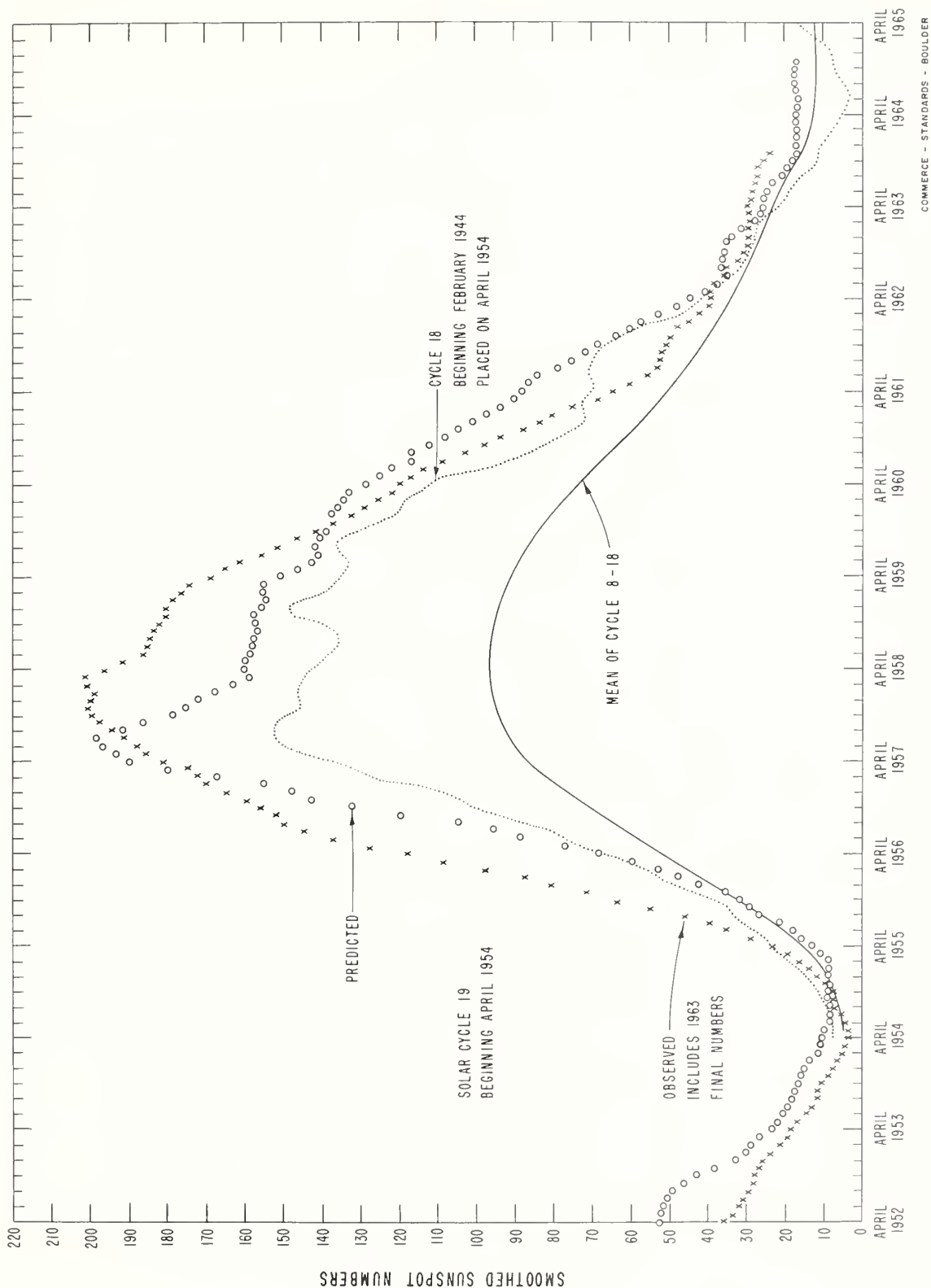
- (a) IQSY Alert Periods - May 1964

The descriptive text was republished November 1963.

DAILY SOLAR INDICES

Apr. 1964	American Relative Sunspot Numbers R_A
1	0
2	0
3	1
4	0
5	1
6	3
7	8
8	10
9	11
10	10
11	2
12	4
13	3
14	1
15	2
16	0
17	0
18	0
19	1
20	7
21	19
22	16
23	16
24	15
25	12
26	1
27	0
28	0
29	0
30	0
Mean:	4.8

May 1964	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	7	68.9
2	0	68.4
3	0	69.8
4	10	70.3
5	14	71.9
6	11	70.9
7	10	70.9
8	9	71.5
9	7	70.9
10	7	70.1
11	7	70.1
12	0	69.4
13	0	68.5
14	9	68.3
15	17	68.0
16	17	70.0
17	23	69.6
18	11	70.4
19	9	68.7
20	8	67.7
21	7	68.0
22	18	67.1
23	13	67.3
24	11	68.0
25	11	67.5
26	14	68.4
27	8	67.7
28	8	69.6
29	8	69.1
30	9	68.2
31	9	67.7
Mean:	9.4	69.1



PREDICTED AND OBSERVED SUNSPOT NUMBERS

CALCIUM PLAGE AND SUNSPOT REGIONS

MAY 1964

May 1964	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTA- TIONS)	DATE FIRST SEEN ⁽¹⁾	DURA- TION (DAYS) ⁽¹⁾	CMP VALUES		HISTORY
				AREA	INT					AREA	COUNT	
1.1	N30	7258 (2)	New	200	1.5	b - d	1	5/1	1			
1.9	N06	7255	7201	700	2	1 - 1	2	4/25	13			
2.0	S38	7259 (2)	New	100	1.5	b - d	1	5/1	1			
2.2	S06	7267 (2)	New	200	1	b - d	1	5/3	1			
2.5	N25	7271	New	(100)	(2)	b - d	1	5/5	2			
2.8	S35	7260 (2)	New	100	1.5	b - d	1	5/1	1			
3.3	N12	7256	7204	300	2.5	1 - 1	2	4/26	13			
3.5	S17	7268	New	100	2	b - d	1	5/4	2			
4.3	N35	7265 (3)	New	200	2.5	b - d	1	5/2	4			
5.4	N34	7261	New	300	1	b - d	1	≤5/1	≥5			
5.4	N06	7274	New	200	2	b - d	1	5/6	4	150	2	b - 1
5.8	S02	7269	New	400	3	b - 1	1	5/4	8			
6.5	S14	7262 (2)	New	(100)	(1.5)	1 - d	1	5/1	1			
6.7	S09	7278 (2.5)	New	200	2.5	b - d	1	5/8	1			
6.7	S08	7263	New	100	1	1 - d	1	5/1	6			
7.0	N04	7264	New	400	1.5	1 - d	1	5/1	7			
7.8	S13	7275 (2)	New	200	1.5	b - d	1	5/7	1			
8.0	N24	7272 (2)	New	(100)	(2)	b - d	1	5/5	1			
9.2	N39	7282 (2)	New	(100)	(1.5)	b - d	1	5/11	1			
9.3	N17	7276 (4)	New	200	1.5	b - d	1	5/7	3			
10.8	S15	7270	New	300	1.5	1 - d	1	5/4	8			
11.1	N25	7273	7232	800	3	1 - 1	2	5/5	12			
12.2	N33	7280 (2)	New	(200)	(2.5)	b - d	1	5/10	1			
12.2	S03	7283 (2)	New	200	2	b - d	1	5/11	1			
12.4	N29	7284 (2)	New	200	1.5	b - d	1	5/11	1			
13.2	S38	7290 (2)	New	(100)	(1.5)	b - 1	1	5/17	1			
13.5	N02	7287 (6)	New	(300)	(1.5)	b - d	1	5/15	2			
14.2	N11	7277	7222	400	1.5	1 - d	3	5/7	9			
14.6	S44	7285	New	100	1.5	b - d	1	5/14	3	20	4	b - d
15.4	N13	7279	7224	1000	3	1 - 1	5	5/9	13			
16.0	S10	7281	New	100	1.5	1 - d	1	5/10	5			
16.6	N23	7292 (2)	New	100	1.5	b - d	1	5/18	1			
17.3	N29	7299 (2)	New	(200)	(1.5)	b - d	1	5/21	1			
17.5	S03	7293	New	100	1.5	b - d	1	5/18	3			
18.0	S02	7302 (2)	New	(100)	(2)	b - 1	1	5/22	1			
18.2	N31	7296	New	200	1.5	b - d	1	5/19	3	70	6	b - d
19.5	N06	7286	New	800	3	1 - 1	1	5/14	12			
19.6	S11	7303	New	(200)	(1.5)	b - d	1	5/22	2			
19.8	S05	7291	New	100	1	b - d	1	5/17	4			
19.9	S09	7288 (2)	New	(500)	(1.5)	b - d	1	5/15	1			
20.0	S18	7289 (2)	New	(300)	(1)	b - d	1	5/15	1	(50)	(2)	b - d
20.0	N48	7304 (2)	New	(100)	(1.5)	b - d	1	5/22	1			
21.0	S06	7312 (2)	New	(100)	(1.5)	b - d	1	5/24	1			
21.2	N23	7311 (2)	New	(200)	(2)	b - d	1	5/24	1			
21.2	S20	7300	New	200	1.5	b - d	1	5/21	2			

CALCIUM PLAGE AND SUNSPOT REGIONS

IIB

MAY 1964

May 1964	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTA- TIONS)	DATE FIRST SEEN(1)	DURA- TION (DAYS)(1)	CMP VALUES		HISTORY
				AREA	INT					AREA	COUNT	
21.2	N29	7308 (2)	New	(100)	(1.5)	b - d	1	5/23	1	120	4	b - d
21.3	N27	7294 (2)	New	(100)	(1.5)	b - d	1	5/18	1			
21.5	N05	7307	New	(200)	(2)	b - d	1	5/23	3			
22.1	N20	7295 (2)	New	(100)	(1.5)	b - d	1	5/18	1			
22.1	N11	7297	New	300	3.5	b / 1	1	5/20	9			
22.5	N68	7305 (2)	New	100	1.5	b - d	1	5/22	1			
23.1	S10	7301	New	200	1.5	b - 1	1	5/21	6			
23.3	N29	7315 (2)	New	(100)	(1.5)	b - d	1	5/25	1			
23.7	S44	7306 (2)	New	400	1.5	b - d	1	5/22	1			
23.9	N41	7309	New	100	1.5	b - d	1	5/23	2			
25.5	S08	7317	New	200	1	b / d	1	5/27	3			
26.0	N47	7318 (2)	New	100	1.5	b - d	1	5/27	1			
26.5	N07	7298	New	(500)	(1)	1 - d	1	5/20	3			
27.0	S22	7325	New	(300)	(2)	b \ d	1	5/30	2			
27.4	N32	7323 (2)	New	(200)	(1.5)	b - d	1	5/29	1			
27.3	S50	7310 (2)	New	(400)	(1)	b - d	1	5/23	1			
27.6	N45	7321 (2)	New	200	1	b - d	1	5/28	1			
28.4	N14	7313	7255	300	1	1 - d	3	5/24	9			
29.0	N18	7314 (7)	7255	(200)	(1)	1 \ d	3	5/24	2			
29.3	S18	7326	New	(100)	(2)	b - d	1	5/31	2			
30.4	N16	7319	7256	600	1.5	1 - 1	3	5/24	13			
30.6	S50	7322 (2)	New	(200)	(1.5)	b - d	1	5/28	1			
31.3	S08	7320 (2)	New	(200)	(1.5)	b - d	1	5/27	1			
31.7	S27	7327 (2)	New	100	1.5	b - d	1	6/1	1			
31.8	N28	7337 (2)	New	(100)	(1.5)	b - d	1	6/4	1			

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(1) No calcium plage data were secured at the McMath-Hulbert Observatory on May 12 and 13, 1964.

(2) These very small and ephemeral plages last for only one day.

(3) New - Near position of 7216.

(4) New - In position of 7213.

(5) New - In position of 7263.

(6) New - In position of 7236.

(7) Part of 7255.

IIc MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

MAY 1964

May 1964	TIME MEAS. UT	LAT	MER DIST	TYPE	May 1964	TIME MEAS UT	LAT	MER DIST.	TYPE
1-4	No Spots				19	2305	N07	W03	α f
5-7	No Obs.				20-21	No Spots			
8	2240	00	W50	α p*	22	2305	N12	W12	β f
9	1755	00	W61	α p*	23	No Obs.			
10-11	No Obs.				24	1555	N13	W35	β f
12-13	No Spots				25-27	No Obs.			
14	1605	N13	E10	β	28	2120	N05	E51	α p
15	1715	N14	W04	β f	29	1610	N05	E41	β p
16	No Obs.				30	1445	N05	E28	α p
17	1740	N07	E27	β	31	1605	N05	E14	α p
18	2155	N07	E10	β					

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* As referred to Northern Hemisphere.

Erratum: In CRPL-F 236B for April 1964 page IIb, the sunspot reported by Mt. Wilson for March 17, 1964 should have been N11 E63 instead of N11 W63.

PROVISIONAL CORONAL LINE EMISSION INDICES

MAY 1964

CMP May 1964	North East quadrant (observed 7 days earlier)				South East quadrant (observed 7 days earlier)				South West quadrant (observed 7 days later)				North West quadrant (observed 7 days later)			
	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁
1	15	25	8	11	7	11	10	12	x	x	x	x	x	x	x	x
2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
3	13	15	6	8	3	2	3	4	9	20	x	x	19	22	x	x
4	7	9	x	x	2	3	x	x	7	8	11	13	13	18	8	10
5	13	20	13	32	2	4	11	16	x	x	x	x	x	x	x	x
6	8	11	15	18	2	6	13	14	x	x	x	x	x	x	x	x
7	8	14	12	17	4	6	17	25	1	3	x	x	11	17	12	16
8	x	x	x	x	x	x	x	x	7	11	10	18	12	14	10	13
9	6	7	12	16	3	4	8	12	6	8	11	15	11	12	12	15
10	18	37	10	24	18	36	6	8	3	8	10	12	17	25	9	13
11	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	x	x	x	x	x	x	x	x	1	5	x	x	8	14	x	x
13	x	x	13	17	x	x	10	11	x	x	x	x	x	x	x	x
14	x	x	x	x	x	x	x	x	x	x	18	20	x	x	9	16
15	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
16	x	x	x	x	x	x	x	x	x	x	15	20	x	x	13	18
17	6	8	x	x	4	6	x	x	5	6	12	16	6	8	13	20
18	7	9	11	18	7	8	13	25	x	x	x	x	x	x	x	x
19	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
20	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
21	x	x	13	18	x	x	14	20	x	x	12	16	x	x	15	28
22	1	6	8	10	4	6	10	14	10	16	x	x	8	11	x	x
23	6	8	13	17	7	8	15	22	x	x	x	x	x	x	x	x
24	0	0	11	13	1	6	8	9	x	x	x	x	x	x	x	x
25	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	4	6	x	x	3	11	x	x	x	x	x	x	x	x	x	x
27	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
28	x	x	14	18	x	x	15	22	x	x	17	24	x	x	12	15
29	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
30	x	x	8	12	x	x	11	16	x	x	x	x	x	x	x	x
31	12	20	8	10	4	11	10	14	11	18	11	14	12	16	11	17

x = no observations

* = yellow line

a = index computed from low weight data

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SOLAR FLARES

MAY 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	APPROX. LAT.	MER. DIST.	M-MATH FLARE REGION				TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH H _o		MAX INT %
LOCKHEED	MAY 1964														
	01	0420	0430	NO FLARE	PATROL										
	01	0500	0515	NO FLARE	PATROL										
	01	2355	2400	NO FLARE	PATROL										
	02	0135	0150	NO FLARE	PATROL										
	02	0340	0500	NO FLARE	PATROL										
	02	1907	1917	1910	N43 W28			1-	2	1910	.20	.30		10	
	04	0150	0230	NO FLARE	PATROL										
	04	0245	0320	NO FLARE	PATROL										
	04	0415	0550	NO FLARE	PATROL										
UCCLE UCCLE	04	2210	2330	NO FLARE	PATROL										
	04	2355	2400	NO FLARE	PATROL										
	05	0000	0005	NO FLARE	PATROL										
	05	0100	0230	NO FLARE	PATROL										
	05	0315	0325	NO FLARE	PATROL										
	05	1025	1030		S01 E05			1-							
	05	1343	1355		N26 E82			1-							
	05	2045	2050	NO FLARE	PATROL										
	05	2200	2345	NO FLARE	PATROL										
		06	0115	0125	NO FLARE	PATROL									
ONOREJOV MCMATH HTE-PROVEN CAPRI-S SAC PEAK CAPRI-S	06	0230	0245	NO FLARE	PATROL										
	06	0500	0520	NO FLARE	PATROL										
	06	0540	0545	NO FLARE	PATROL										
	06	1242	1257	1248	S02 W15	7269		1-	3	1247	.30	.30		2.20	
	06	1244	1252	1251	S01 W13			1-	2	1248	.60	.60			
	06	1245	1255	1251	S01 W13			1-	3	1251	.60	.60			
	06	1246	1252		S02 W15			1-	C	1248	.24	.22		17	
	06	1249 E	1255 U	1249 E	S02 W15			1-	3	1426	.30	.30		18	
	06	1424	1429	1425 -	S02 W16			1-	C		.22	.20			
	06	1424 U	1433		S02 W16			1-	C		.40	.40			
MCMATH HTE-PROVEN MANILA MCMATH OTTAWA MCMATH CAPRI-S ONOREJOV SAC PEAK	06	2025	2030	NO FLARE	PATROL			1-	1	2155	.40	.40			
	06	2138	2200 D	NO FLARE	PATROL	7269									
	06	2205	2255	NO FLARE	PATROL										
	07	0615 E	0645		N24 E50			1-			.90	1.60			
	07	0618	0642	0623	N22 E56			1-	2	0624	.40	.56			
	07	1240	1246	1242	S03 W30	7269		1-	2	0623	.30	.30			
	07	1428	1439	1433	S01 E31			1-	C	1242	.72	.75			
	07	1431	1437	1433	S03 W32	7269		1-	2	1433	.40	.40			
	07	1431 E	1437		S03 W29			1-	3	1433	.30	.40			
	07	1431 E	1447	1433 U	S01 W32			1-	1	1434	.30	.40			
LOCKHEED MANILA	07	1432 E	1440		S01 W31			1-	C	1433	.39	.41		1.70	
	07	2135	2140	NO FLARE	PATROL										
	07	2200	2240	NO FLARE	PATROL										
	08	1210	1220	NO FLARE	PATROL			1-	2	1646	.20	.40		10	
	08	1640	1652	1646	S36 W70										
	09	0127	0137	0130	S02 W48			1-	2	0130	.12	.14			

SOLAR FLARES

MAY 1964

OBSERVATORY	DATE MAY 1964	OBSERVED UNIVERSAL TIME		LOCATION		DURATION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME		MEASUREMENTS		PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG. DIST.				U T	Sq. Deg.	CONC. Sq. Deg.	MAX. WIDTH He	
MANILA CAPRI-S	09	0415	0426	N14 E90			1-	2	0417	.25	1.25		
	09	0507	0520	N14 E90			1-	2	0512	.25	1.25		
	09	0545	0600	N14 E90			1-	2	0550	.20	1.00		
	09	0555	0601	N18 E86	7279	6 D	1	3	0557	.50	2.30		
	09	0615	0640	N14 E89			1-	2	0618	.20	.54		
	09	0729	0738	N14 E89			1-	2	0734	.16	.43		
	09	0912	0920	N17 E86			1-	3	0916	.20	.90		
CAPRI-S	09	0958	1003	N17 E85			1-	3	1000	.20	.90		
	10	0310	0330	NO FLARE	PATROL								
	11	0250	0310	NO FLARE	PATROL								
	11	0410	0505	NO FLARE	PATROL								
	11	1015	1020	NO FLARE	PATROL								
	11	1030	1035	NO FLARE	PATROL								
	12	1630	1638	N12 E30			1-	C	1632	.37	.39		
OTTAWA	12	1805	1810	NO FLARE	PATROL								
	13	0315	0325	NO FLARE	PATROL								
	13	0335	0345	NO FLARE	PATROL								
	13	1620	1640	NO FLARE	PATROL								
	13	1730	1750	NO FLARE	PATROL								
	14	0125	0135	NO FLARE	PATROL								
	14	0145	0150	NO FLARE	PATROL								
UCCLE	14	0155	0320	NO FLARE	PATROL								
	14	0450	0600	NO FLARE	PATROL								
	14	1424	1429	N20 E11			1-						
	14	1433	1436	N20 E11			1-						
	14	1452	1500	N20 E11			1-						
	14	1453	1559	N16 E18			1-						
	14	1527	1533	N20 E11			1-						
UCCLE	14	1527	1533	N16 E18			1-						
	14	1544	1545	N16 E18			1-						
	14	1557	1607	N20 E11			1-						
	15	0010	0030	NO FLARE	PATROL								
	15	0225	0245	0230	N14 E03		1-	2	0230	.25	.25		
	15	0600	0605	NO FLARE	PATROL								
	15	0700	0715	NO FLARE	PATROL								
CAPRI-S	15	0800	0840	NO FLARE	PATROL								
	16	0608	0613	N06 E46			1-	2	0608	.40	.60		
	16	0826	0829	N11 E48			1-	2	0856	1.41	2.15		
	16	0838	0902 D	N05 E48	7286	24 D	1-						
	16	0849	0858	N11 E48			1-						
	16	1010	1012	N11 E48			1-						
	16	1545	1545 E	N05 E48			1-	2	1545	.82	1.25		
ARCETRI	16	2248	2310 D	N07 E38			1-	V	2255	1.40	1.80		80
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
MANILA	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		
	17	0830	0845	N11 E38			1-	1	0831	.16	.18		

COMMERCE - STANBURY - BOLLEA

SOLAR FLARES

MAY 1964

OBSERVATORY	DATE MAY 1964	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MER. DIST.	MCMATH PLACE REGION				TIME — U.T.	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	
UCCLE	17	1111	1126	N11 E32				1-					
UCCLE	17	1131	1139	N11 E32				1-					
UCCLE	17	1148	1202	N11 E32				1-					
MANILA	18	0428	0448	N07 E21				1-	2	0433	.33	.33	
WENDEL	18	0636	0726	N05 E20		7286	50	1+	3	0647	7.00	7.00	
ONDREJOV	18	0643	0710	N07 E21		7286	27	1	3	0646	.50	.50	
MANILA	18	0643	0711	N07 E20				1-	2	0646	2.00	2.00	
CAPRI-S	18	0646	0711	N08 E21		7286	25	1	2	0654	.97	.97	
UCCLE	18	0918	0929	N12 E21				1-	C	1150	.70	.70	
OTTAWA	18	1145	1212	N06 E18		7286	30	1	3	1150	.20	.20	
ONDREJOV	18	1145	1215	N07 E18				1-	3	1149	.72	.86	
CAPRI-S	18	1148	1156	N07 E17				1-	3	1150	.60	.60	
MCNATH	18	1148	1215	N07 E16		7286		1-	1	1150	.14	.16	
SAC PEAK	18	1242	1326	N16 W46				1-	19	1256	1.70	1.70	
OTTAWA	18	1242	1330	N13 W44				1-	3	1255	.60	.60	
ONDREJOV	18	1245	1347	N17 W44				1-	3	1332	.80	.80	
CAPRI-S	18	1329	1339	N07 E16				1-	C				
SAC PEAK	18	1415	1420	N18 E25				1-					
WENDEL	18	1446	1458	N05 E16		7286	28	1-	2	1521	5.00	5.00	
MCNATH	18	1511	1539	N05 E15				1-	2	1518	.95	.95	
OTTAWA	18	1516	1530	N07 E16				1-	3	1524	1.30	1.30	
CAPRI-S	18	1517	1531	N07 E15				1-	3	1557	.36	.36	
OTTAWA	18	1556	1612	N07 E15				1-	2	1920	.40	.40	
LOCKHEED	18	1917	1927	N06 E14		7286		1-	1	1920	.30	.30	
MCNATH	18	1919	1927	N07 E14				1-	2	2025	.20	.20	
LOCKHEED	18	2019	2031	N07 E16				1-	2	2121	.90	.90	
LOCKHEED	18	2057	2142	N06 E14				1-	2	2118	.40	.40	
MCNATH	18	2116	2130	N07 E13		7286		1-	2	2359	.40	.40	
LOCKHEED	18	2346	0009	N06 E13				1-	2				
MANILA	19	0225	0245	NO FLARE	PATROL								
UCCLE	19	0400	0430	NO FLARE	PATROL								
UCCLE	19	0640	0656	N08 E08				1-	2	0444	.25	.25	
UCCLE	19	0953	1004	N08 E06				1-					
LOCKHEED	19	1159	1204	N07 E02				1-	2	1842	.40	.40	
LOCKHEED	19	1838	1859	N06 E00				1-	1	1842	.30	.30	
MCNATH	19	1841	1905	N08 W02		7286							
MANILA	20	0200	0305	NO FLARE	PATROL								
UCCLE	20	0529	0545	N08 W07				1-	2	0532	.33	.33	
CAPRI-S	20	0932	0947	N07 W10				1-	1	1220	.50	.50	
MCNATH	20	1217	1226	N11 W66				1-	1	1220	.40	.40	
SAC PEAK	20	1341	1435	N14 W70		7279		1-	C				
MCNATH	20	1343	1420	N14 W72				1-	1	1353	.60	.60	
CAPRI-S	20	1344	1417	N14 W71		7279	37	1	3	1356	1.20	1.20	
LOCKHEED	20	2002	2037	N14 W71		7279	33	1	2	2025	.40	.40	
MCNATH	20	2008	2032	N14 W75				1-	1	2011	.20	.20	
LOCKHEED	20	2101	2114	N14 W71		7279		1-	2	2107	.30	.30	

COMMENTS - STANDARD - SOLAR

SOLAR FLARES

MAY 1964

OBSERVATORY	DATE MAY 1964	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	M-MATH PLACE REGION				TIME — U T	MEAS. AREA Sq. Deg	CORR. AREA Sq. Deg	MAX. WIDTH H _o	
MANILA LOCKHEED	21	0108	0116	0109	N08 W29		1-	2	0109	.33	.33			
	21	0112 D	0122	0112	N09 W20		1-	2	0112	.80	.80		10	
	21	0215	0250	NO FLARE	PATROL									
	21	0524	0532	0526	N08 W31		1-	2	0526	.16	.16			
	21	0615	0620	NO FLARE	PATROL									
CAPRI-S ARCETRI	21	0807	0852		N07 W22	7286	1	2	0830	3.50	3.90			
	21	0827 E	0854 D		N08 W20	7286	1	2	0835	2.49	2.70			
	21	0827 E	0916		N07 W22	7286	1	2	0827	3.50	4.00			
	21	1748	1800 D		N07 W28	7286	1-	2	1750	.20	.20			
	21	2014	2024	2017	N08 W29		1-	2	2017	.20	.20		10	
MCMATH LOCKHEED	21	2016	2023		N07 W28	7286	1-	1	2020	.10	.10			
	22	0200	0210	NO FLARE	PATROL									
HTE-PROVEN WENDEL	22	0320	0520	NO FLARE	PATROL		1-			1.20	1.20			
	22	0715 E	0724 D		N12 W03		1+				7.00			
	22	0736	0826		N07 W33	7286	1-	3	0805	.52	.65			
	22	0805 E	0825 D		N09 W35		1-	3	0920	1.01	1.04			
	22	0810 E	0945 D		N11 W04		1-	3	2030	.10	.30			
MCMATH LOCKHEED	22	2027	2050	2030	S55 E54	7310	1-	3	2030	.10	.30		10	
	22	2028	2115	2042	S53 E49		1-	2	2042	.30	.40		10	
	22	2105	2122	2108	S18 E70		1-	2	2108	.30	.60		10	
	23	0145	0150	NO FLARE	PATROL									
	23	0250	0255	NO FLARE	PATROL									
WENDEL MCMATH	23	0305	0315	NO FLARE	PATROL									
	23	0345	0355	NO FLARE	PATROL									
	23	0425	0430	NO FLARE	PATROL									
	23	1605	1616	1610	N12 W19	7297	1-	2	1610	.20	.20			
	23	1618	1639		N12 W19		1-	2	1635	.40	.50	1.30		
ONDREJOV MCMATH	23	1632 E	1644		N15 W22		1-	2	1724	.20	.20			
	23	1722	1744	1724	N12 W24	7297	1-	2	1743	.20	.20			
	23	1735	1751		N12 W19	7297	1-	2	2115	.20	.20			
	23	1736	1805	2115	N12 W23	7297	1-	2	2136	.20	.20			
	23	2114	2125	2146	N12 W23	7297	1-	2	2206	.20	.20			
MCMATH SAC PEAK	23	2135	2146	2206	N12 W23	7297	1-	2		.99	1.49		19	
	23	2205	2219 D		N12 W23	7297	1-	2						
	24	0104	0138 U	0118	N08 W58		1-	C						
	24	0155	0420	NO FLARE	PATROL									
	24	0425	0440	NO FLARE	PATROL									
WENDEL ONDREJOV	24	0555	0603		N12 W26		1-	1	1428	.30	.40	1.40		
	24	1425 E	1431 D		N13 W34		1-	2	1539					
	24	1522	1618 D	1523	N11 W34	7297	1-	2						
	24	1915	1925	1539	N11 W34									
	24	2030	2035	NO FLARE	PATROL									
MCMATH MANILA	24	2155	2400	NO FLARE	PATROL									
	25	0000	0110	NO FLARE	PATROL		1-	1	0159	.33	.36			
	25	0154	0219	0159	N12 W40									

COMMERCE • STAMPAOS • BOLDOR

SOLAR FLARES

MAY 1964

OBSERVATORY	DATE MAY 1964	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX PHASE	APPROX. LAT	MER DIST				MC-MATH PLAGE REGION	TIME — U T	MEAS AREA Sq Deg	CORR AREA Sq Deg	
ONDREJOV ONDREJOV	25	0230	0430	NO FLARE	PATROL			1-	3	0522			2.10	
	25	0518 E	0529 D		N25 W90			1-	3	0729			1.80	
	25	0725 E	0745		N13 W43									
	26	0350	0405	NO FLARE	PATROL	7286	6	1	2	1621	.40	2.00		10
	26	1619	1625		N08 W90			1-	2	2157	.20	.50		10
LOCKHEED	26	2152	2210	2157	N05 E78			1-	2	2202	.30	.70		10
LOCKHEED	26	2157	2217	2202	N47 W56			1-	2	2304	.20	.50		10
LOCKHEED	26	2301	2310	2304	N05 E75			1-	2					
LOCKHEED	27	0045	0135	0110	N05 E78			1-	2	0110	.30	.70		10
MANILA	27	0535	0542 D	0538	N04 E73			1-	1	0538	.16	.34		
	27	0835	0840	NO FLARE	PATROL									
	27	0845	0850	NO FLARE	PATROL									
UCCLE	27	1451	1501		N04 E70			1-						
LOCKHEED	28	0117	0155	0130	N01 E40			1-	2	0130	.20	.20		10
	28	0210	0215	NO FLARE	PATROL									
	28	0250	0255	NO FLARE	PATROL									
	28	0845	0845	NO FLARE	PATROL									
	28	0910	0935	NO FLARE	PATROL									
	28	0945	1010	NO FLARE	PATROL									
LOCKHEED	28	2107	2129	2117	N02 E54			1-	2	2117	.20	.20		10
	28	2235	2245	NO FLARE	PATROL									
IKOMASAN	28	2249	2255 D		N05 E54	7316	6 D	1	V	2249	2.00	3.40		100
	29	0450	0505	NO FLARE	PATROL									
UCCLE	29	1120	1122		N02 F46			1-						
UCCLE	29	1121	1122		N04 F42			1-						
UCCLE	29	1422	1429	1427	N03 E43			1-						
	29	2340	2345	NO FLARE	PATROL									
	30	0445	0510	NO FLARE	PATROL									
UCCLE	30	1002	1004		N05 E30			1-						
HTE-PROVEN	30	1115	1145	1130	N05 E30			1-		1130	.40	.50		
UCCLE	30	1131	1148		N05 E28			1-						
LOCKHEED	30	1956	2011	2001	N03 E28			1-	2	2001	.20	.20		10
MCMATH	30	1958	2015 D	2000	N04 E27	7316		1-	2	2000	.30	.30		
	31	0535	0540	NO FLARE	PATROL									
UCCLE	31	1116	1127		N05 E16			1-						
UCCLE	31	1124	1147 D		N05 E14			1-		1144	.50	.50		
HTE-PROVEN	31	1125	1158 D		N05 E17			1-		1143	.40	.50		
CAPRI-S	31	1135	1212		N04 E14			1-	2	1150	.30	.30		
OTTAWA	31	1137	1219 D	1142	N05 E14			1-	C	1142	.30	.30		
SAC PEAK	31	1920	2005 D	1939	N03 E10			1-	C		.70	.68		18
LOCKHEED	31	1920	2010	1935	N05 E10			1-	C	1935	.90	.90		20
HUANCAYO	31	1928 E	2015 D	1942	N04 E08			1-	S	1942	1.30	1.30	1.60	

COMET - 67P/NEOWISE - SOLAR

SOLAR FLARES

MAY 1964

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH,
BAKOU	PIRCULLI, USSR	IKOMASAN	KYOTO, JAPAN		NETHERLANDS
CAPETOWN	ROYAL OBSERVATORY,	KIEV KO	KIEV GAO, USSR	NIZMIR	KRASNOYA PAKHRA, USSR
	CAPE OF GOOD HOPE	KIEV KY	KIEV UNIVERSITY, USSR	SAC PEAK	SACRAMENTO PEAK, N.MEX. USA
CAPRI F	CAPRI, ITALY (GERMAN)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJÖRADEN	STOCKHOLM, SWEDEN
CAPRI S	CAPRI, ITALY (SWEDISH)	MCMATH	MCMATH-HULBERT	SCHAUTINS	SCHAUINSLAND, GFR
CRIMEE	SIMEIZ, USSR	MOSCOU	PONTIAC, MICH., USA	TASHKENT	TASHKENT, USSR
HERSTHONCEU	ROYAL GREENWICH OBSERVATORY,		MOSCOM-GAISH, USSR	WENDEL	WENDELSTEIN, GFR
	HERSTHONCEUX, ENGLAND				
HTE-PROVEN	HAUTE-PROVENCE		NEW SCHAUVIN FREIBURG, GFR		

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

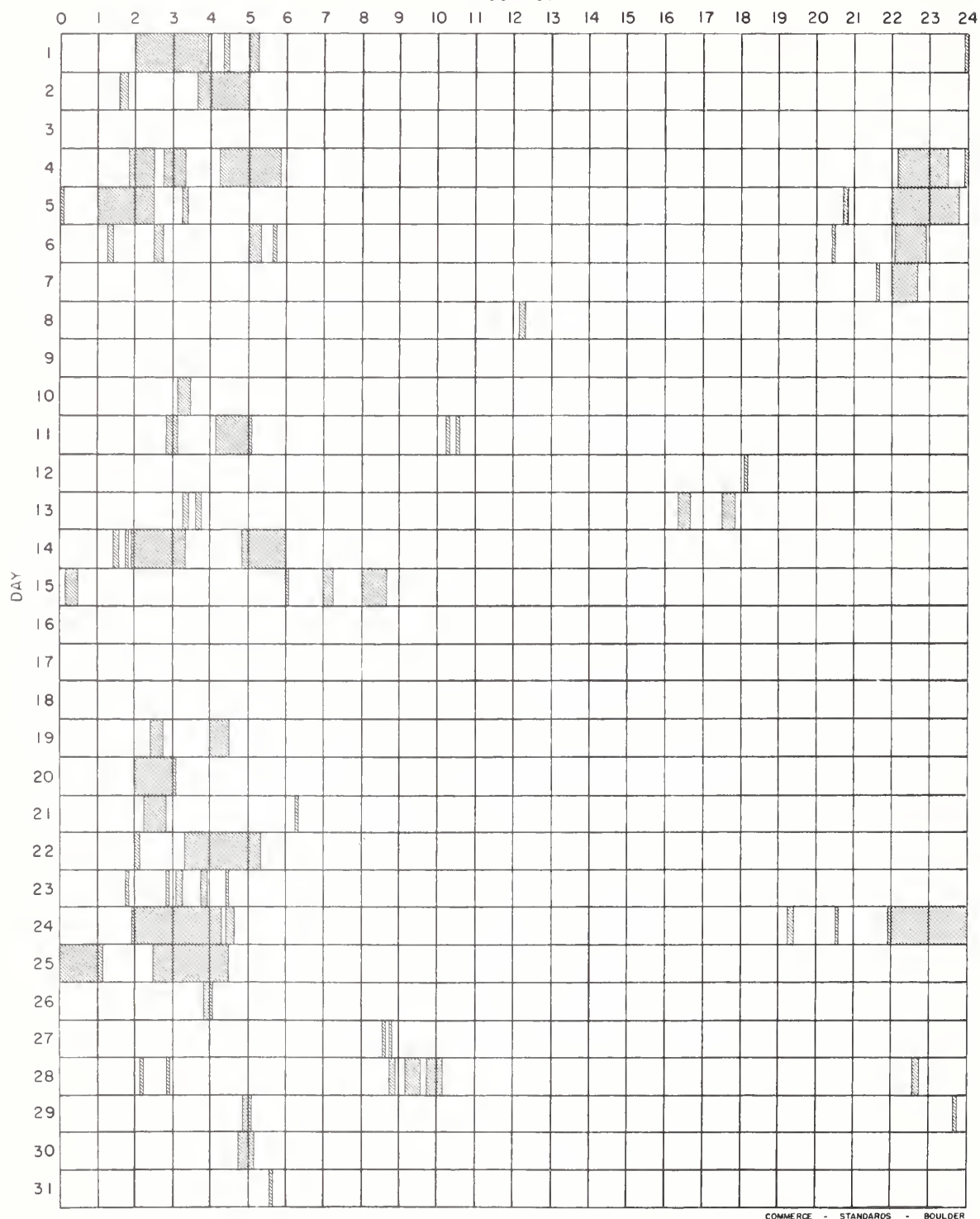
E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

COMMERCE - STANDARD - BOULDER

INTERVALS OF NO FLARE PATROL OBSERVATIONS

MAY 1964

HOUR-UT



Arcetri
Capri-S (Swedish)
Dunsink
Haute-Provence

Huancayo
Ikomasan
Istanbul
Lockheed

Mitaka
McMath-Hulbert
Manila
Ondrejov

Ottawa
Sacramento Peak
Uccle
Wendelstein

SOLAR FLARES

FEBRUARY 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL LONGSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	MEMATH PLACE REGION				TIME — U T	MEAS. AREA Sq Deg	CORR. AREA Sq Deg	MAX. WIDTH H ₀	
BUCHAREST BUCHAREST	FEB 1964													
	06	0115	0130	NO FLARE	PATROL									
	06	1135	1145	NO FLARE	PATROL									
	06	1325	1345	NO FLARE	PATROL									
	08	0825	0906				41	1	2			2.60		
	08	0935 E	1000 D		S09 W33	7133		1-	2			.60		
	09	0035	0105	NO FLARE	PATROL									
	09	0120	0155	NO FLARE	PATROL									
	10	0220	0225	NO FLARE	PATROL									
	10	2100	2109	2103	N08 E05			1-		2103	.30	.30		
CLIMAX	11	2045	2315	NO FLARE	PATROL									
	12	1825	1900	NO FLARE	PATROL									
	12	2155	2300	NO FLARE	PATROL									
	14	0600	0610	NO FLARE	PATROL									
	14	0655	0700	NO FLARE	PATROL									
	14	1140	1200	NO FLARE	PATROL									
	14	1205	1255	NO FLARE	PATROL									
	14	1325	1330	NO FLARE	PATROL									
	15	0400	0530	NO FLARE	PATROL									
	15	0615	0630	NO FLARE	PATROL									
NIZAMIAH	15	0945	1005	NO FLARE	PATROL									
	15	1100	1150	NO FLARE	PATROL									
	15	1155	1205	NO FLARE	PATROL									
	15	1210	1235	NO FLARE	PATROL									
	15	1255	1355	NO FLARE	PATROL									
	16	0230	0300	NO FLARE	PATROL									
	17	0930	1015	NO FLARE	PATROL									
	17	1100	1245	NO FLARE	PATROL									
	17	1445	1450	NO FLARE	PATROL									
	17	1455	1500	NO FLARE	PATROL									
HTE-PROVEN	17	1505	1510	NO FLARE	PATROL									
	17	1555	1605	NO FLARE	PATROL									
	19	0250	0310	NO FLARE	PATROL									
	20	1014	1024	1017	N15 E14			1-	2	1017	1.82	2.02	1.40	
	21	1019 E	1035		N09 E42	7161	16 D	1		1020	2.70	3.80		
	23	0050	0115	NO FLARE	PATROL									
	23	0140	0155	NO FLARE	PATROL									
	23	0500 E	0800 D		N08 E17			1-	C	0759	2.20	2.40	2.40	90
	23	0504	0556 D	0511	N08 E17	7161	52 D	1			2.58	1.44		
	TACHKENT IRKUTSK													

COMMERCE - STANDARDS - BULLSEP

SOLAR FLARES

FEBRUARY 1961

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DUR. T.O.N. MINUTES	IM FOR TANCE	OBS COORD	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX LAT	APPROX LONG				MEAS AREA Sq Deg	COSE Sq Deg	MAX WIDTH In	MAX INT	
CAPETOWN CLIMAX CLIMAX CLIMAX CLIMAX	FEB 1961												
	23	0647 E	0808	N09 E18			1-	C	1.50	1.60			
	23	1820	1831	N09 E12			1-		.60	.60			
	23	1926	2006	N07 E10			1-		1.40	1.40			
	23	2134	2158	N06 E14			1-		.60	.60			
SYDNEY SYDNEY SYDNEY	23	2229	2252	N09 E06			1-		2.237	.30			
	24	0045 E	0105 D	N08 W35			1-	P	.60	.80			
	24	0147	0205	N08 E08			1-	C	.60	.60			
	24	0150	0211	N09 E06			1-	C	.60	.60			
	24	0700	0715	NO FLARE			1-	C	.40	.40			
NIZAMIAH	25	0525	0534	N09 W12	7161	9	1	2	2.13	2.28	1.50		
	25	0655	0700	NO FLARE									
	25	1320	1335	NO FLARE									
	25	2105	2110	NO FLARE									
	25	2120	2125	NO FLARE									
CAPETOWN CAPETOWN	26	1020	1040	NO FLARE									
	26	1050	1140	NO FLARE									
	26	1205	1300	NO FLARE									
	26	1305	1325	NO FLARE									
	27	0945	0950	NO FLARE									
	27	1020	1030	NO FLARE									
	27	1055	1100	NO FLARE									
	27	1120	1130	NO FLARE									
	27	1145	1225	NO FLARE									
	27	1235	1255	NO FLARE									
	28	1041	1100	508 E52			1-	C	.80	1.30			
	28	1356	1437	503 E52			1-	C	.80	1.30			
	29	0155	0200	NO FLARE									
	29	0605	0640	NO FLARE									

These flare reports are addenda to the February 1964 flares published in CRPL-F 235 for March 1964.

ATHENS	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE	ATHENS, GREECE
BAKOU	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR	PIRCULI, USSR
CAPETOWN	ROYAL OBSERVATORY	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE	CAPE OF GOOD HOPE
CAPRI F	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)	CAPRI, ITALY (GERMAN)
CAPRI S	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)	CAPRI, ITALY (SWEDISH)
CRISTE	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR	SIBEL, USSR
HERSTONCEU	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE	ROYAL GREENWICH OBSERVATORY, HAUTE-PROVENCE
HTE-PROVEN	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE	HAUTE-PROVENCE
HONOLULU	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA	HONOLULU, HAWAII, USA
KYOTO	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN	KYOTO, JAPAN
KYIV	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY	KYIV, KY
LOS ANGELES	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA	LOS ANGELES, CALIF., USA
MCMATH	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA	MCMATH, ILLINOIS, USA
MOSCOW	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR	MOSCOW, USSR
NEW SCHAUEN	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR	NEW SCHAUEN, GFR
NEDERHERST	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS	NEDERHERST, DEN BERGH, NETHERLANDS
VRASNAYA	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR	VRASNAYA, PAKISTAN, USSR
SAC PEAK	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA	SAC PEAK, SACRAMENTO, CALIF., USA
SCHAUEN	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA	SCHAUEN, ILLINOIS, USA
TASHERENT	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR	TASHERENT, USSR
WENDEL	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR	WENDEL, GFR

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

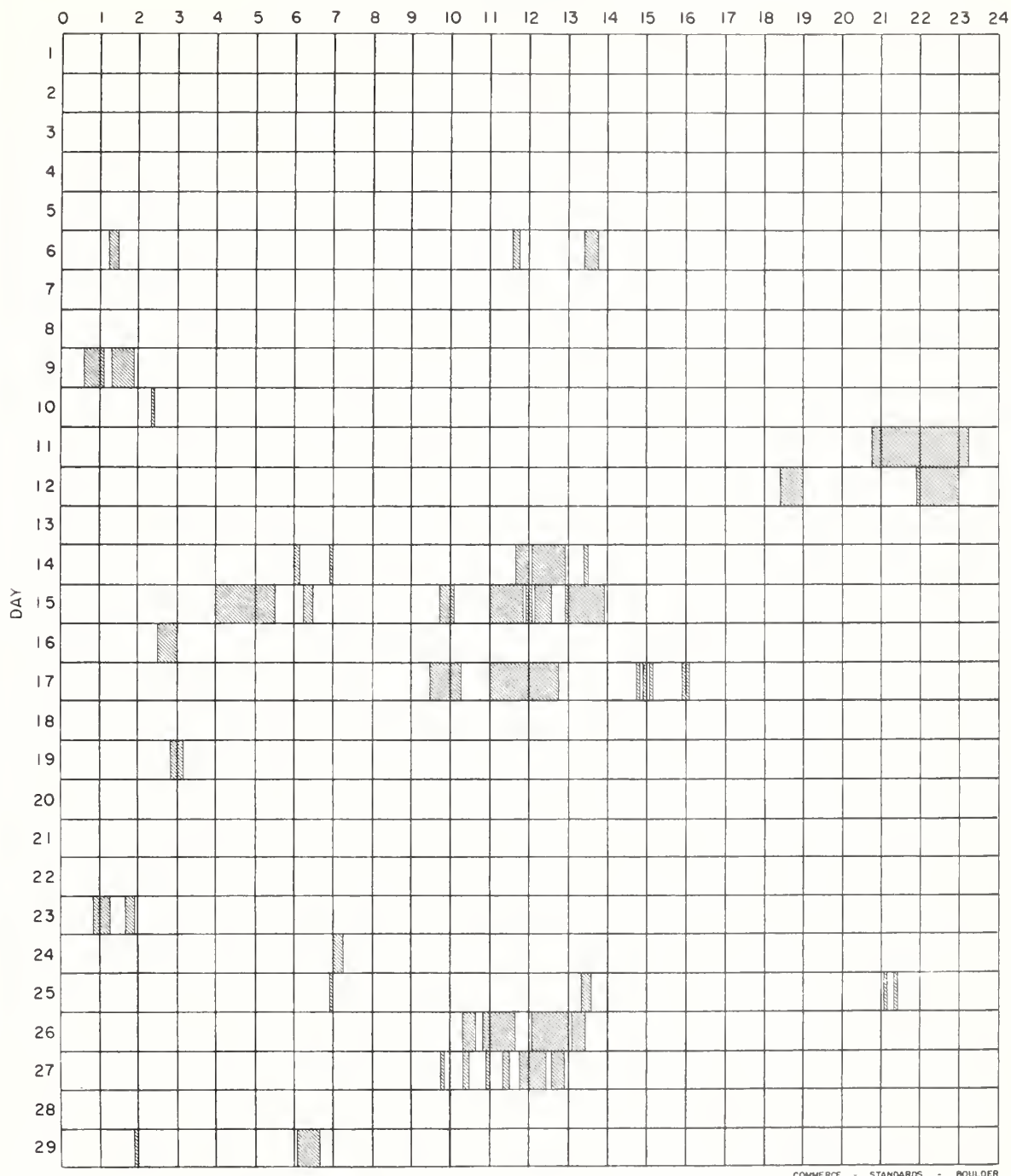
Erratum: The following changes should be made for the January 1964 flares reported by Nizamiah in CRPL-F 2378 May 1964 p.22: January 21 Beginning 1034 ending 1043, latitude N07 instead of S07, region number 7108. January 22 Beginning 0927 ending 0937, latitude N08 instead of S08, region number 7109.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

IIIj

FEBRUARY 1961

HOURLY-UT



Observatories included:

Abastumani	Capri-S (Swedish)	Huancayo	Locarno	Nizmir	Thessaloniki
Arcetri	Climax	Ikomasan	Lockheed	Ondrejov	Uccle
Athens	Crimee	Irkutsk	Manila	Ottawa	Voroshilov
Bucharest	Dunsink	Istanbul	McMath-Hulbert	Sacramento Peak	Zurich
Capetown	Haute-Provence	Kiev-KO	Mitaka	Sydney	
Capri-C (German)	Herstmonceux	Kodaikanal	Nizamiah	Tachkent	

IONOSPHERIC EFFECTS OF SOLAR FLARES

SHORT WAVE RADIO FADEOUTS SUDDEN PHASE ANOMALIES
 SUDDEN COSMIC NOISE ABSORPTION SUDDEN ENHANCEMENTS OF SIGNAL
 SUDDEN ENHANCEMENTS OF ATMOSPHERICS SUDDEN FREQUENCY DEVIATIONS
 SOLAR NOISE BURSTS AT 18 Mc/s

APRIL 1964

APR. 1964	UNIVERSAL TIME			TYPE SWF IMP	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX		ABS	SCNA	SEA	SPA	SES	SFD				
13	1635	1655	1645	SL 1								5	HU BO FM MC	

COMMERCE - STANDARDS - BOULDER

RIOMETER EVENTS

III 1

(Provisional)

APRIL 1964

South Pole

26 Mc/s

APR. 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS	MAR. 1964	START UT	END UT	MAX UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS
1	*					16	0333	0417	0351	8	1
2	**					16	1126	1634	1438	16	4
3	0048	2106	0531	49	9	17	***	1034	0214	13	2
4	0309	2302	0318	91	4	18	1043	2031	1308	31	1
5	0054	0428	0100	102	1	19	0949	1938	1153	26	2
5	0712		0725	15	2	20	0125	1520	0226	61	4
6	0416	0502	0433	4	1	20	1649	1802	1720	6	1
6	1345	1756	1551	13	2	20	2250	0426	2310	19	2
6	2304	1751	2311	43	3	21	0956	1918	1510	23	1
7	**					22	**				
8	0812	1649	1128	18	1	23	**				
8	1927	2002	1937	4	1	24	**				
9	0204	0419	0218	17	2	25	0131	0202	0136	7	1
9	0814	1737	1055	7	3	25	0837	1745	1346	8	1
10	0943	1653	1139	13	1	25	2318	2349	2320	9	1
11	1005	1702	1108	14	1	26	0054	1048	0304	10	3
12	**					26	2323	1708	2353	87	3
13	**					27	**				
14	**					28	0052		0112	86	2
15	1056	1817	1242	11	2	29		1740	0140	27	1
						30	**				

COMMERCE - STANDARDS - BOULDER

* No Data

** No Event

*** Uncertain

IVa

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

MAY 1964

ARO - OTTAWA

2800 Me/s

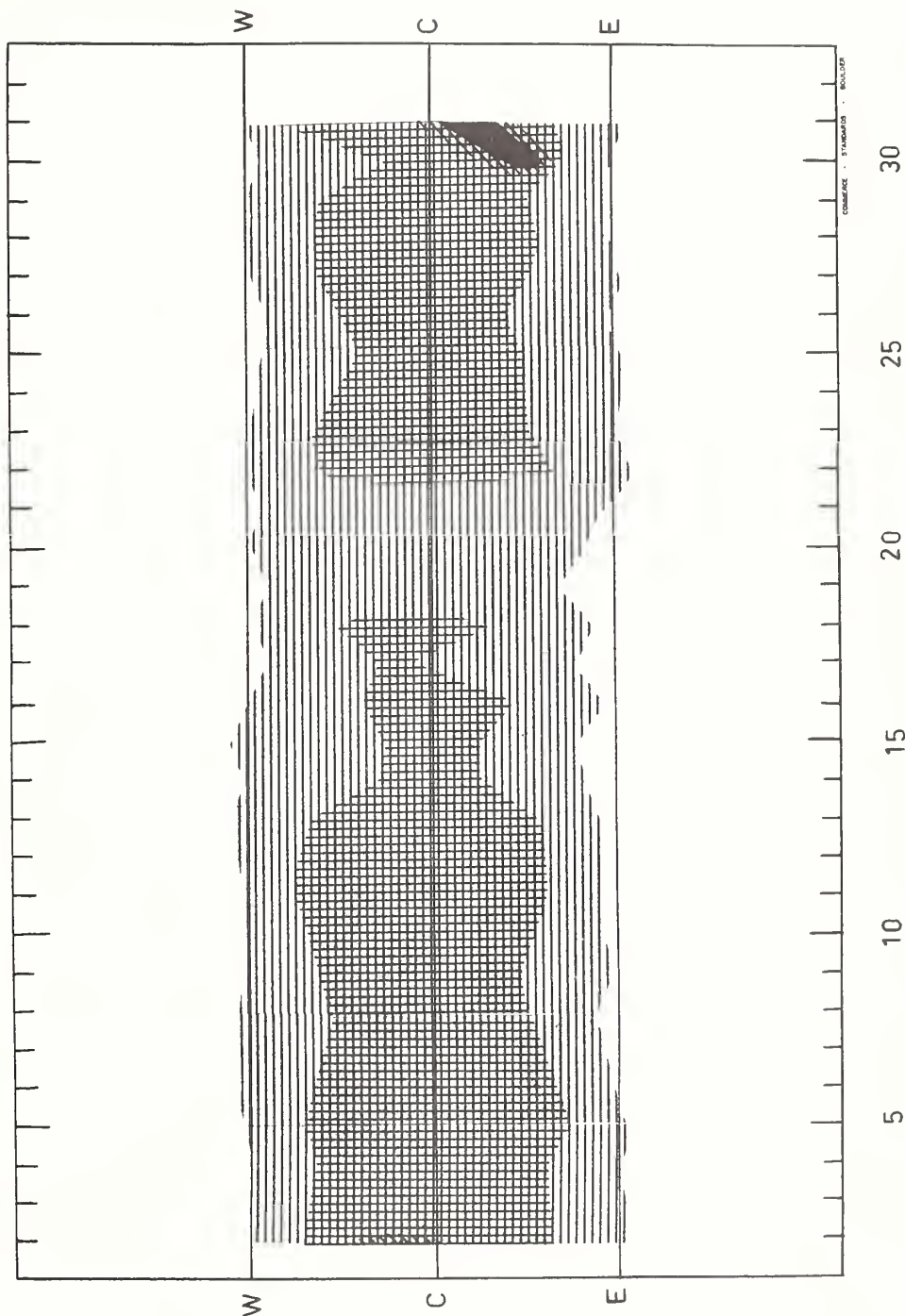
MAY 1964	U R A N E	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM		REMARKS
						TIME	FLUX	
None observed.								

SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATIONS

MAY 1964

169 Mc/s

NANÇAY



MAY 1964

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

MAY 1964

NBS BOULDER

108 Mc s

May 1964	TYPE	START UT	TIME OF MAXIMUM UT	DURATION MINUTES	INTENSITY
2	3	1529.8	1529.9	1.9	3
7	3	1429.9	1431.0	2.2	1
15	3	1615.8	1616.0	1.4	2
15	3	2004.8	2005.0	2.1	2
16	3	1259.0	1301.0	1.9	2
21	3	1146.5	1147.0	2.4	3

NOMINAL TIMES OF OBSERVATION

MAY 1964

NBS BOULDER

108 Mc s

May 1964	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.	May 1964	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.
1	1205-0135	1201-1351; 1450-1902 1205-1700	16	1149-0149	2341-2352
2	1204-0136		17	1148-0149	
3	1203-0137		18	1147-0150	
4	1202-0138		19	1147-1910	
			20	1910-0152	
5	1201-0139		21	1145-0153	
6	1159-0140		22	1144-0154	
7	1158-0141		23	1143-0154	
8	1157-0142		24	1143-0155	
9	1156-0143		25	1142-1829; 2058-0156	
10	1155-0144				
11	1154-0145		26	1141-0157	2000-2128
12	1153-0146		27	1141-0158	1847-1920; 2246-2320; 0130-0158
13	1152-0146				
14	1151-0147				
15	1150-0004; 0109-0148		28	1140-0158	
			29	1140-0158	1140-2140
			30	1139-0159	
			31	1139-0159	0003-0027

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

IVd

MAY 1964

High Altitude Observatory
Boulder

7.6-41 Mc/s

Date May 1964	Bursts			Frequency Range (Mc/s)
	Type	Time (U.T.)	Inten- sity	
3 May	III	1431-1431:30	1	18-34
7	III	1431-1432	1	18-41

COMMERCE - STANDARDS - BOULDER

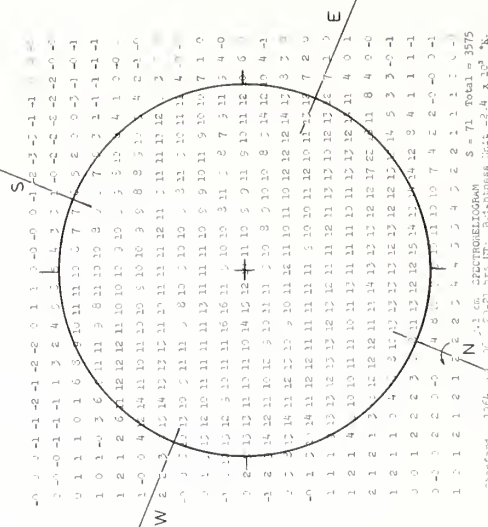
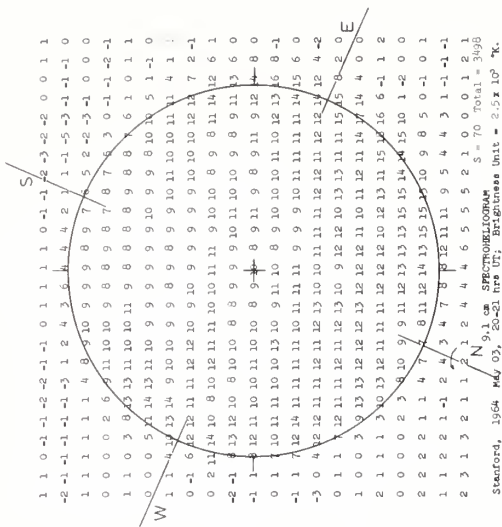
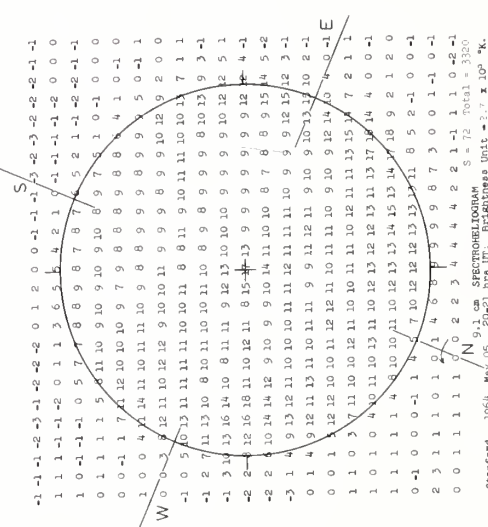
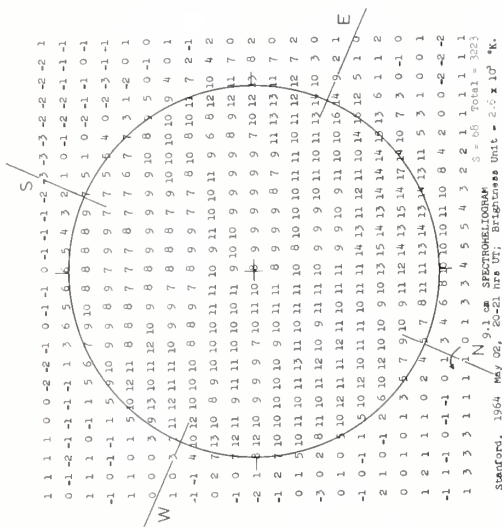
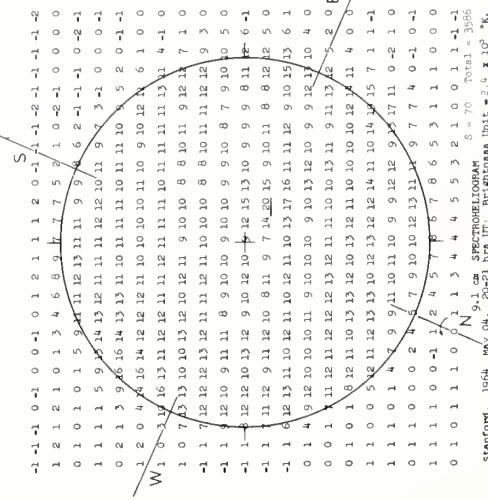
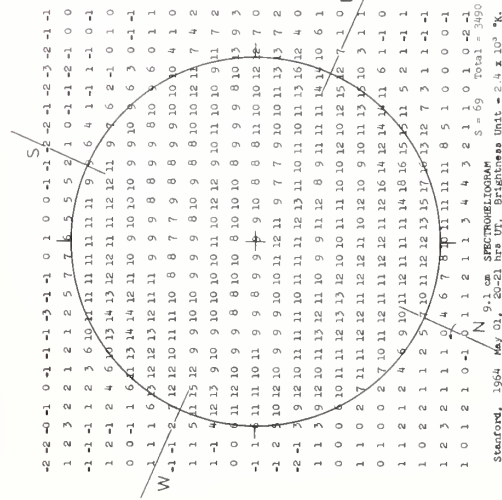
Erratum: 11 August 1963 event at 2357:15-2417 is
type II instead of continuum.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

STANFORD

MAY 1964

9.1 cm

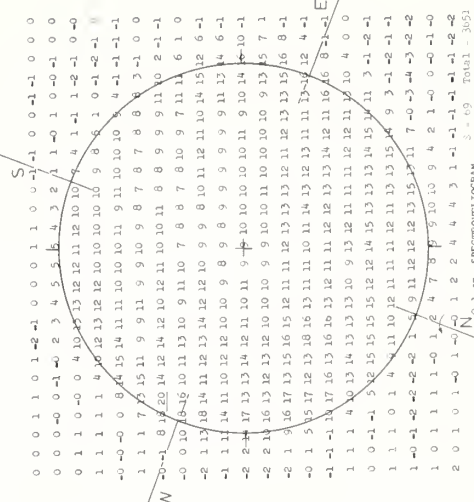
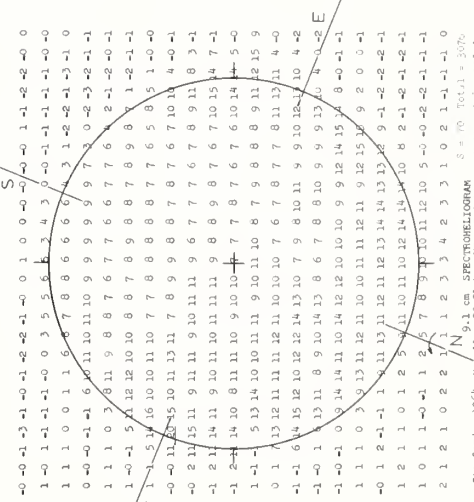
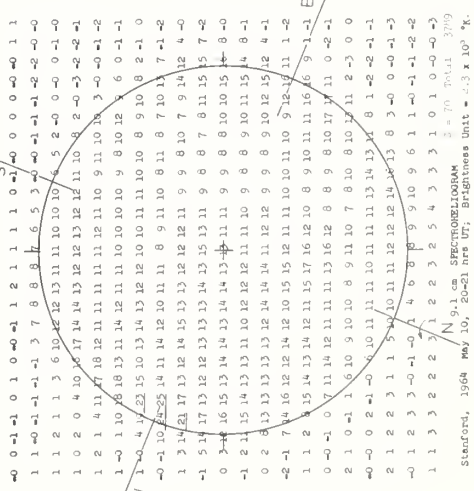
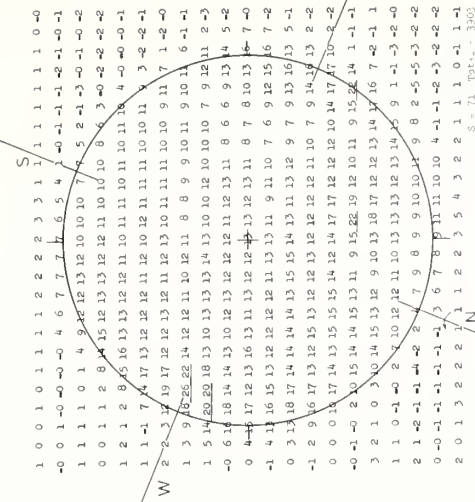
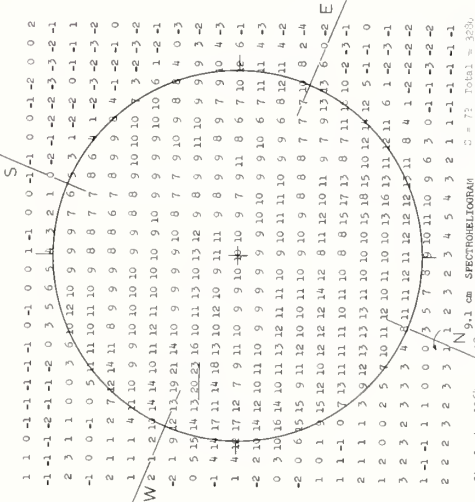
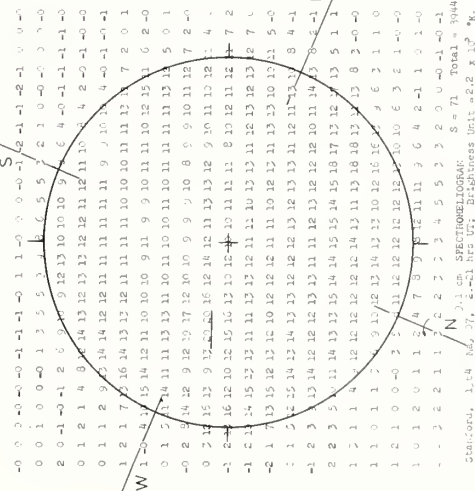


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

STANFORD

MAY 1964

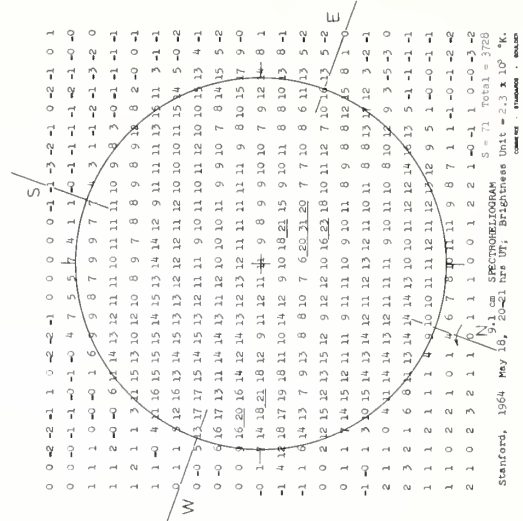
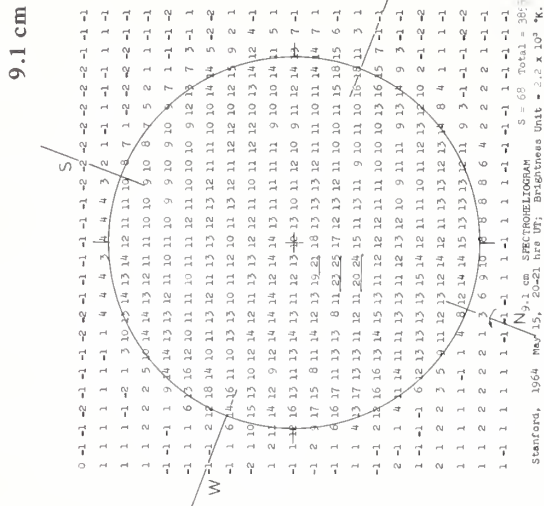
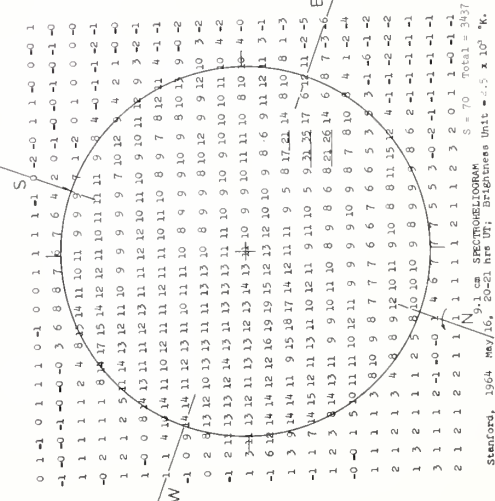
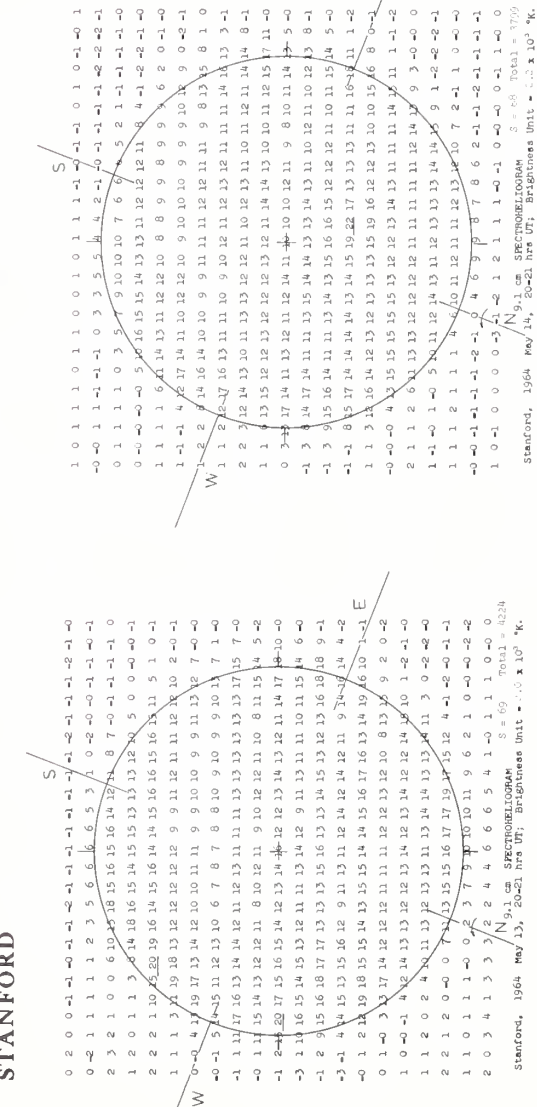
9.1 cm



SOLAR RADIO EMISSION SPECTROHELIOGRAMS

MAY 1964

STANFORD

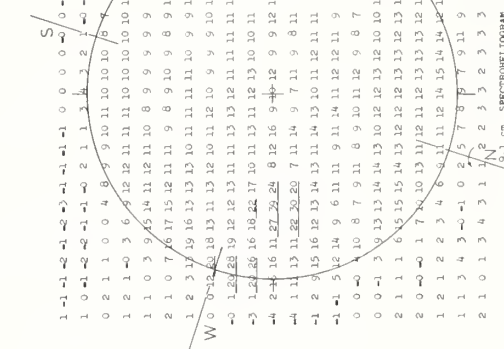
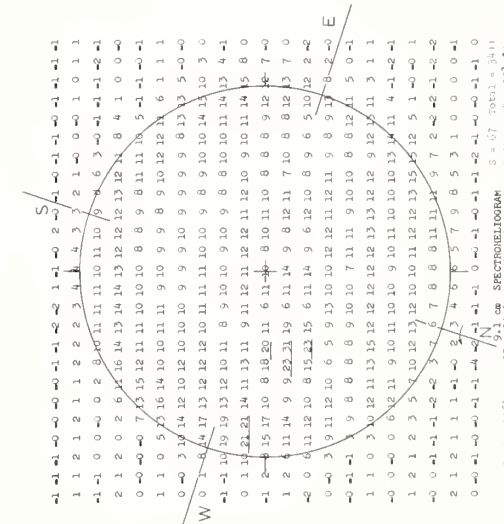
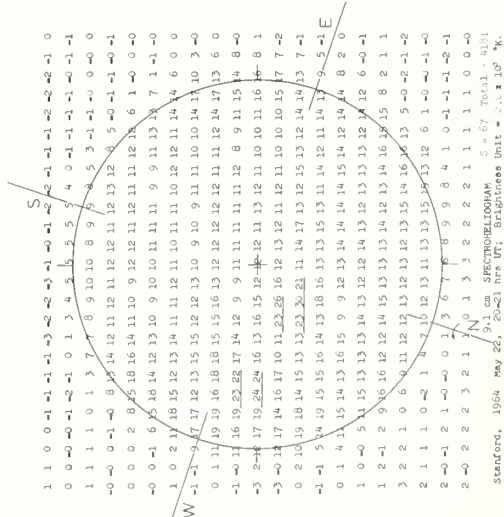
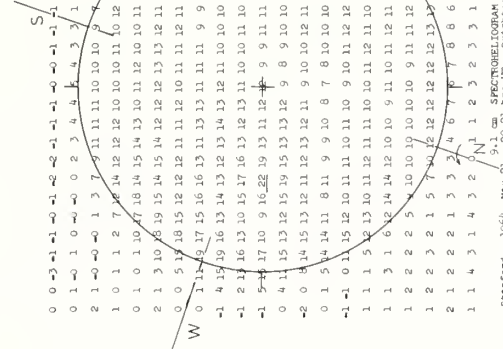
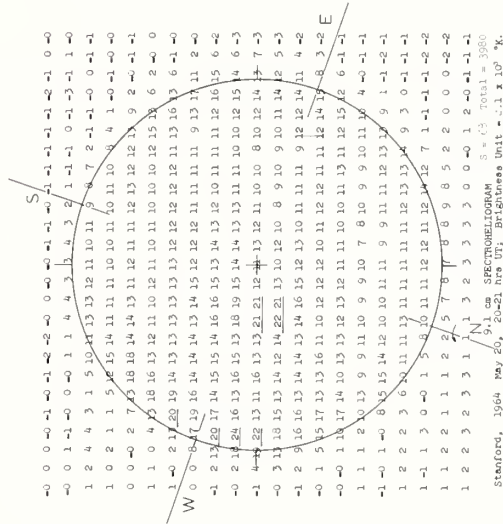
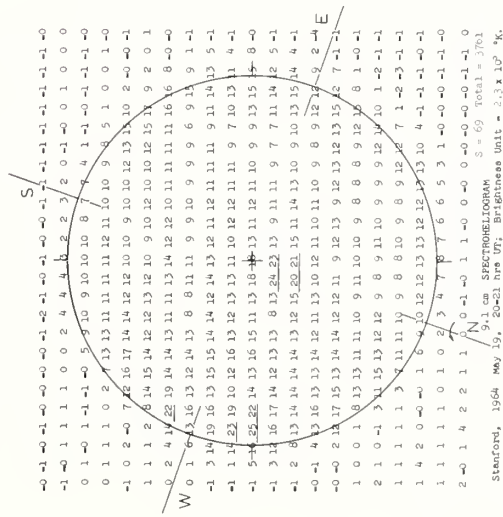


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

MAY 1964

STANFORD

9.1 cm

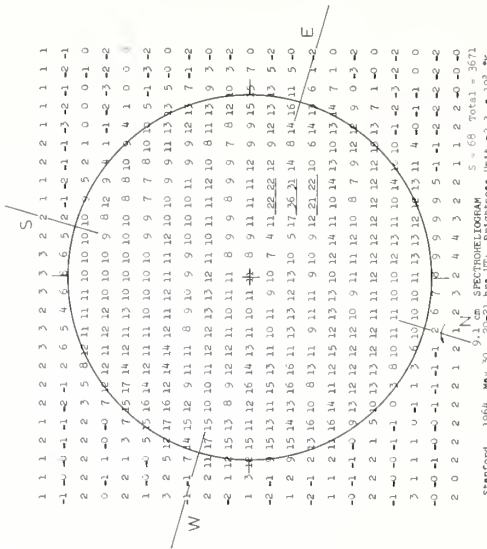
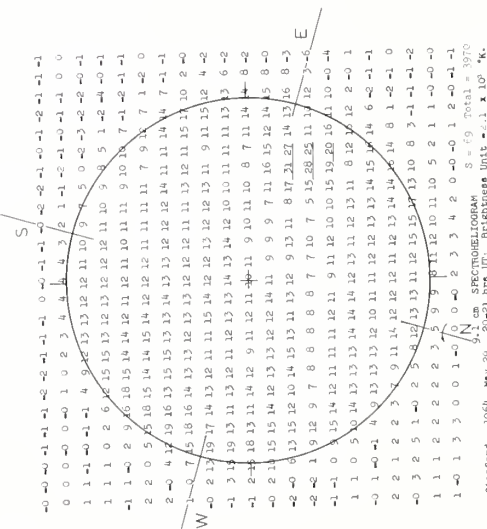
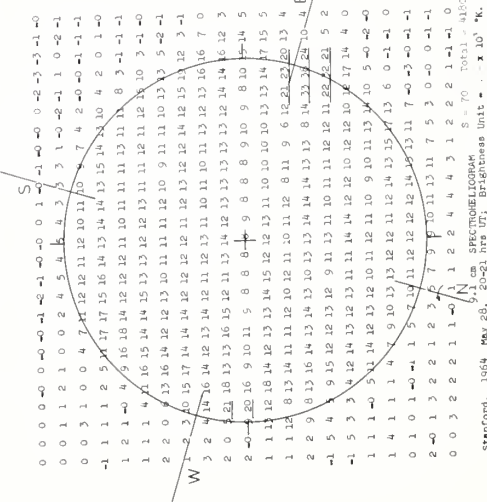
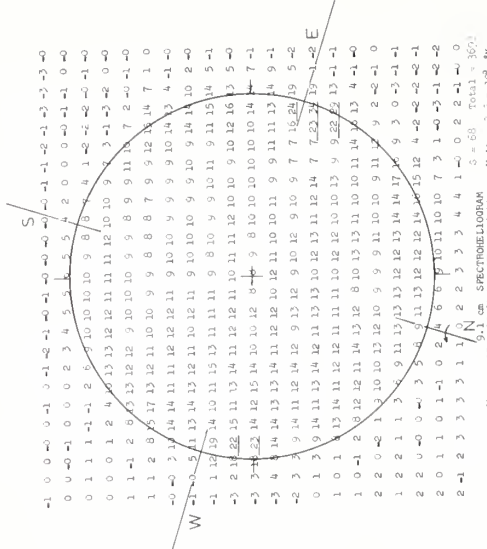
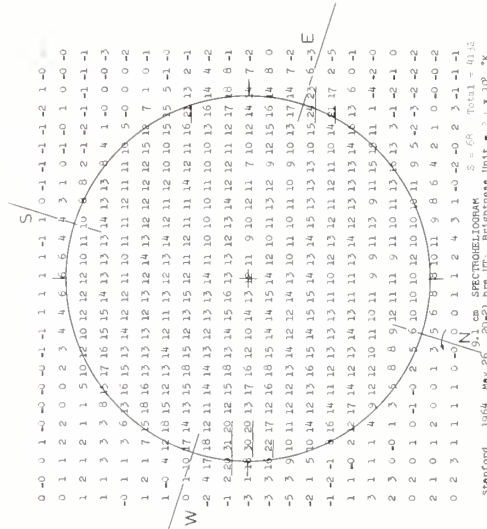
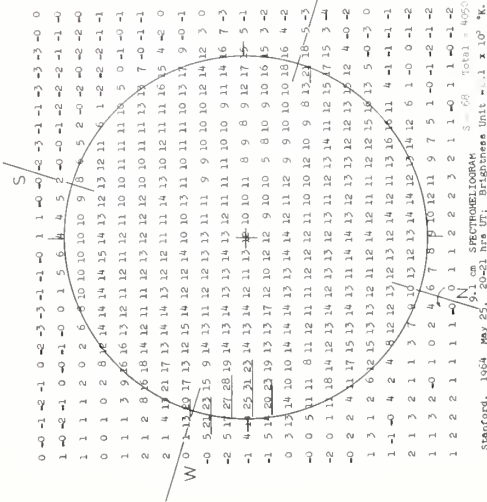


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

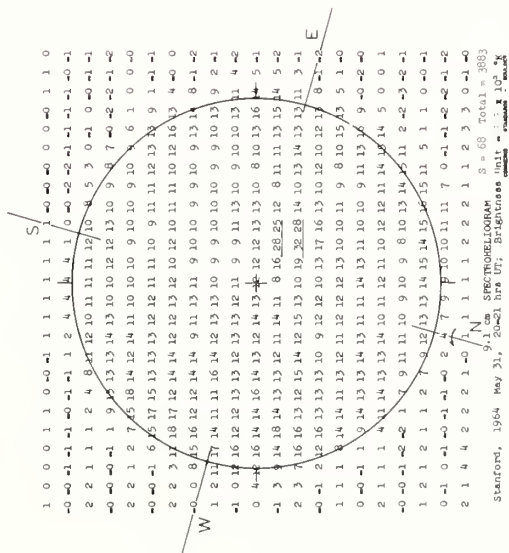
MAY 1964

STANFORD

9.1 cm



SOLAR RADIO EMISSION SPECTROHELIOGRAMS



COSMIC RAY INDICES
(Climax Neutron Monitor)
IGC Station B 305

APRIL 1964

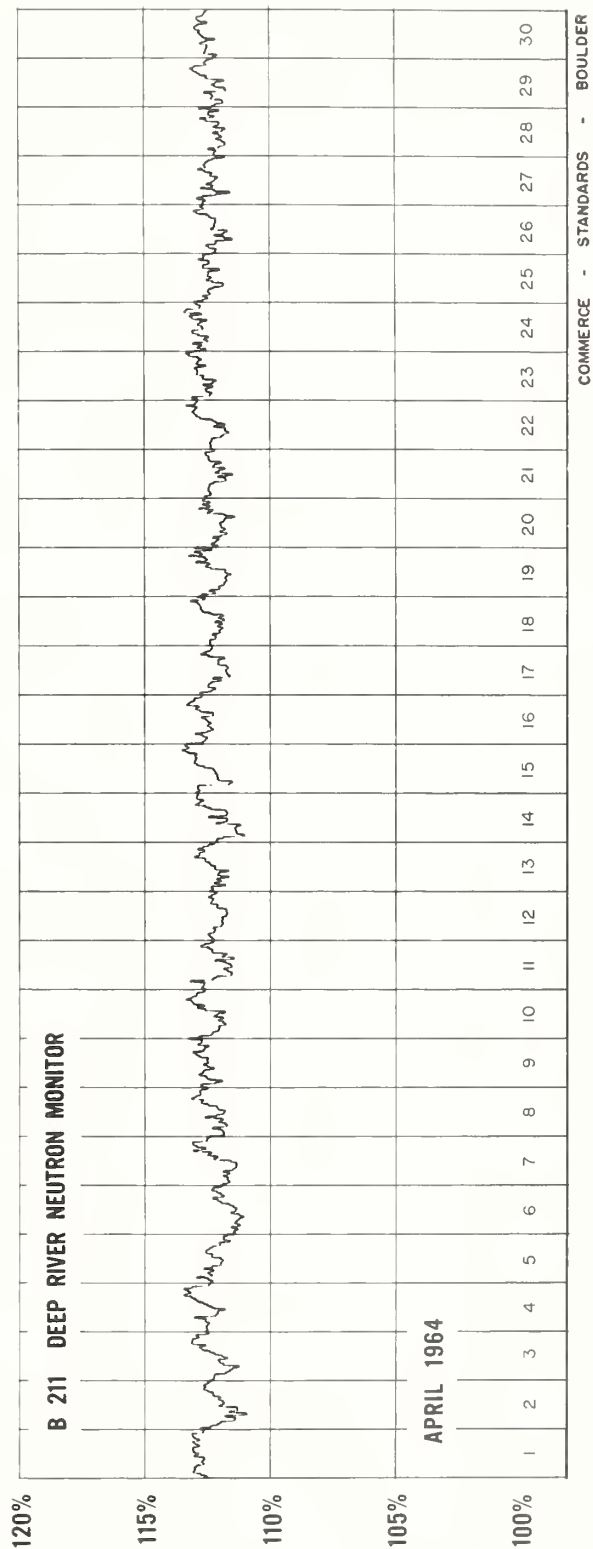
Apr. 1964	DAILY AVERAGE COUNTS / HOUR *	Apr. 1964	DAILY AVERAGE COUNTS / HOUR *
1	3263.7** <40	16	3263.9
2	3293.1	17	3269.1
3	3283.4	18	3257.4
4	3280.7	19	3257.5
5	3289.0	20	3264.0** <40
6	3273.0	21	3262.5
7	3268.0	22	3269.5
8	3259.1	23	3273.4
9	3265.9	24	3267.9
10	3265.5	25	3270.8
11	3257.1	26	3275.4
12	3261.2	27	3276.9
13	3260.9	28	3258.1
14	3246.6	29	3262.8
15	3251.8	30	3268.9

COMMERCE - STANDARDS - BOULDER

* Scaling Factor 128

** No. of Section Hours

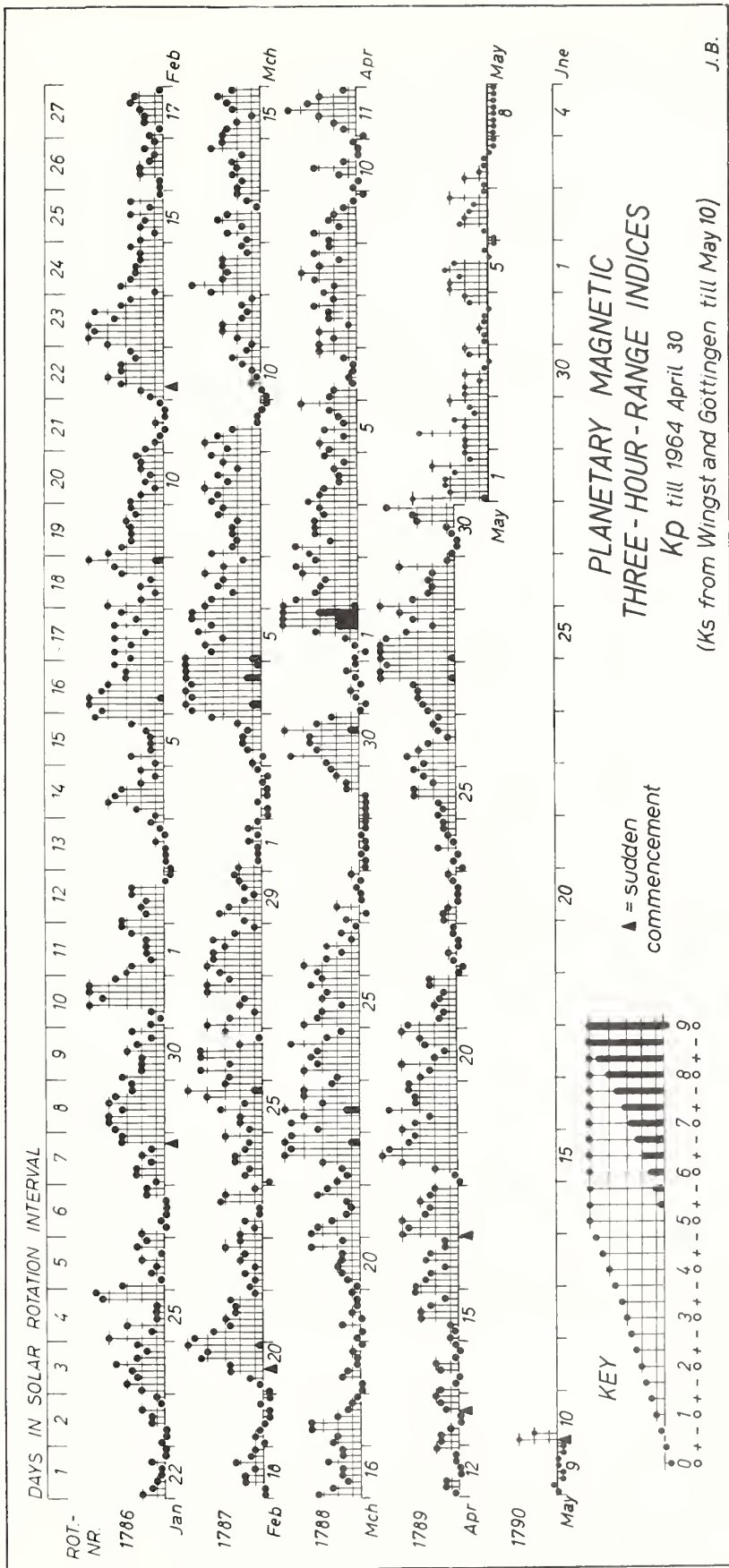
COSMIC RAY INDICES **(Pressure Corrected Hourly Totals)**



GEOMAGNETIC ACTIVITY INDICES

APRIL 1964

Apr. 1964	C	Values Kp								Sum	Ap	Final Selected Days	
		Three hour Gr. interval											
		1	2	3	4	5	6	7	8				
1	1.4	1-	0o	1-	1+	3+	6+	6+	7+	26o	46	Five Quiet	
2	1.3	5+	4+	3+	3o	3-	4o	4+	3+	30+	26		
3	1.1	4-	4+	2+	3+	3+	3+	3-	3o	26o	18		
4	0.6	4-	3o	3-	2-	2-	2o	1+	3-	19-	11		12
5	0.6	2+	3o	1+	3-	1+	2-	2+	4o	19-	11		14
												22	
6	0.3	2+	2o	1-	1o	1-	1-	1+	3o	12-	6	23	
7	0.7	3o	2o	3o	1o	2+	2+	3+	2o	19o	10	24	
8	0.8	3-	2o	3+	4o	3o	2-	3+	2+	22+	14		
9	0.4	2+	3+	2-	2+	2o	1+	1-	0o	14-	7		
10	0.2	1-	0+	2-	3+	1+	0+	0+	1-	9-	5		
11	0.7	0o	1+	2o	3o	5-	4-	3o	1+	19o	14	Five Disturbed	
12	0.1	1-	1+	1+	0+	0+	1-	1-	2o	7+	4		
13	0.2	2-	2-	1o	0+	0+	1+	2-	2o	10o	5		
14	0.1	2-	1-	0+	2-	2o	1-	0+	1-	8o	4		1
15	0.6	1o	1-	1o	3o	3o	2+	1+	3+	16-	9		2
												19	
16	0.6	3+	3-	2+	1+	3-	2+	1+	1+	17+	9	27	
17	1.1	4o	4-	4o	3-	2+	3o	2+	2o	24o	16	28	
18	1.1	0+	1-	2o	4o	5o	5-	4-	3+	24-	21		
19	1.2	4o	3+	2+	5-	3+	3+	4-	4-	28+	22		
20	1.0	3o	2+	4+	2o	1+	3-	3o	4o	22+	15		
21	0.6	4-	2-	1+	2o	2-	1+	2+	2+	16+	9	Ten Quiet	
22	0.0	0+	0o	1-	1o	0+	0+	1-	1-	4o	2		
23	0.0	1+	1+	1o	0+	0+	0+	1-	1o	6+	3		
24	0.2	0o	1-	0+	2-	1-	1o	1+	1+	7o	4		6
25	0.7	2-	1+	2-	3+	3+	2o	3-	3+	19+	11		9
												10	
26	0.7	3-	4-	3o	2+	1o	2-	2o	2-	18o	10	12	
27	1.3	2+	3-	3o	3o	3+	5+	5o	5-	29+	26	13	
28	1.4	5+	5o	5o	5-	4-	2o	3+	4o	33o	33	14	
29	0.9	5o	3+	2+	2o	2+	2o	4o	1o	22o	16	15	
30	0.8	1-	0+	0+	1-	1o	3o	3+	5-	14o	11	22	
												23	
												24	
Mean:	0.69									Mean:	13		



CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

APRIL 1964

NORTH ATLANTIC										NORTH PACIFIC									
APR. 1964	NORTH ATLANTIC 6-HOURLY QUALITY FIGURES				SHORT-TERM FORECASTS ISSUED ABOUT ONE HOUR IN ADVANCE OF:				WHOLE DAY INDEX	ADVANCE FORECASTS (J-REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY:				WHOLE DAY INDEX	ADVANCE FORECASTS (J-REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY:				GEOMAGNETIC K _s
	00 06 12 18				00 06 12 18					1-7 1-7 1-3 1-7 DAYS J-5 J-5 J-5 J-5					1-7 1-7 1-3 1-7 DAYS J-5 J-5 J-5 J-5				
	06 12 18 24				06 12 18 24					FINAL J-5 SOW J-5					FINAL J-5 SOW J-5				
01	5+	5+	7-	5-	5	5	7	6	5+	4	4	4	4	6	4	4	0	(5)	
02	30	3	0-	6-	5	4	4	6	(4+)	4	4	4	4	(4)	4	4	(4)	3	
03	4-	3	0-	6-	6	4	4	6	(4+)	4	4	4	4	5	4	4	(4)	2	
04	5-	3+	7-	6+	6	4	4	6	5+	5	5	5	5	5	5	5	3	2	
05	5+	4+	6+	6+	6	5	4	7	6-	6	6	6	6	6	5	5	3	2	
06	60	4+	60	6+	6	5	7	6	6-	6	6	6	6	6	6	6	1	1	
07	6-	4+	6+	7-	6	5	6	6	6-	5	5	5	5	7	6	6	2	2	
08	60	5-	6+	6+	6	5	6	6	6-	5	5	5	5	6	6	6	3	2	
09	60	6-	7-	6+	6	5	7	6	6+	6	6	6	6	6	7	7	2	1	
10	60	60	7-	7-	6	5	7	6	6+	6	6	6	6	7	7	7	2	1	
11	7-	6-	7-	6+	6	6	7	6	6+	6	6	6	6	7	7	7	2	3	
12	60	5+	7-	7-	6	5	7	7	60	6	6	6	6	6	7	7	1	0	
13	6+	60	7-	7-	6	6	7	7	6+	6	6	6	6	7	7	7	1	1	
14	60	6-	7-	7-	6	5	7	7	6+	7	7	7	7	7	7	7	2	1	
15	60	60	70	7-	6	6	7	7	6+	7	7	7	7	7	7	7	1	2	
16	60	6-	7-	7-	6	5	7	7	6+	7	7	7	7	7	7	7	2	1	
17	50	4+	6+	7-	5	4	6	6	6-	6	6	6	6	6	7	7	(4)	2	
18	6-	50	6+	6+	5	5	6	6	6-	6	6	6	6	6	7	7	2	(4)	
19	5-	50	6+	6	5	5	6	6	6-	5	5	5	5	6	6	6	(4)	3	
20	50	5-	6+	6+	5	5	6	6	6-	5	5	5	5	6	6	6	3	2	
21	50	4+	6+	6	5	5	7	6	5+	6	6	6	6	6	6	6	2	2	
22	4+	5-	60	6+	5	5	6	6	5+	6	6	6	6	7	6	6	0	0	
23	60	5+	7-	7-	5	5	7	6	6+	6	6	6	6	7	7	7	1	0	
24	6+	5+	7-	6+	6	5	7	6	60	7	7	7	7	7	7	7	1	0	
25	60	5+	7-	6+	6	5	7	6	60	7	7	7	7	7	7	7	2	2	
26	60	5-	6+	6+	6	4	6	6	60	6	6	6	6	7	7	7	2	1	
27	60	50	60	6	6	5	6	6	6-	5	5	5	5	6	5	5	3	(4)	
28	5-	30	4+	5-	5	3	5	4	(40)	4	4	4	4	4	4	4	(5)	3	
29	4+	2+	6-	5+	4	3	5	5	(4+)	4	4	4	4	3	4	4	3	2	
30	6-	4+	6+	6-	5	4	6	6	6-	4	4	4	4	6	5	5	1	2	
Score: Quiet Periods										P	20	14	24	23		17	12	17	
										S	6	5	5	7		11	12	16	
										U	0	0	0	0		0	0	0	
										F	0	0	0	0		1	2	0	
Disturbed Periods:										P	2	4	0	0		1	0	2	
										S	2	7	1	0		0	0	1	
										U	0	0	0	0		0	0	0	
										F	0	0	0	0		0	0	1	
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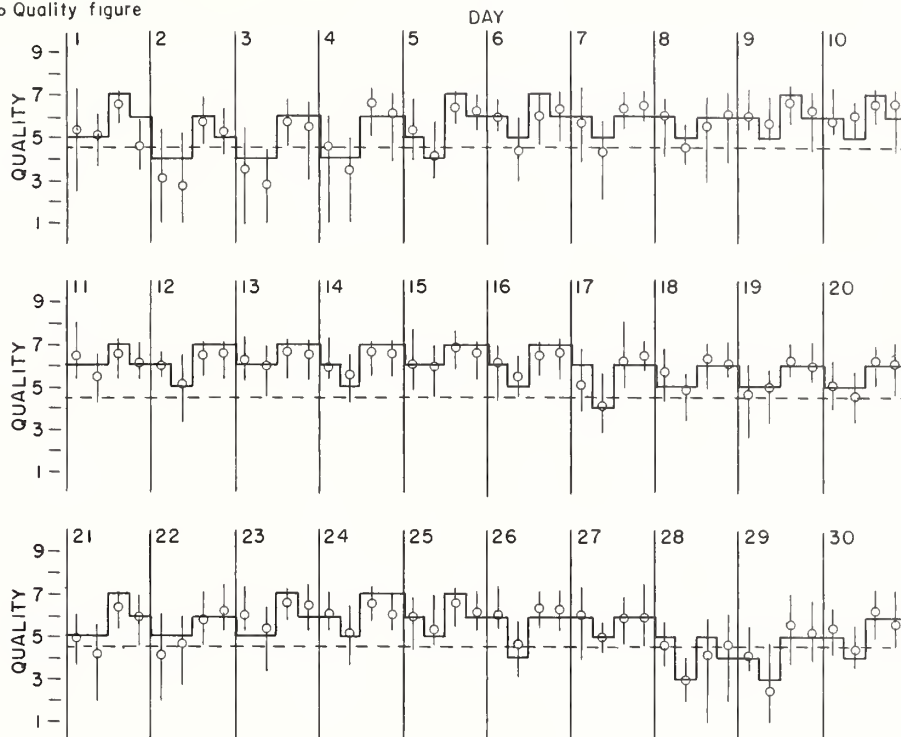
NORTH ATLANTIC

APRIL 1964

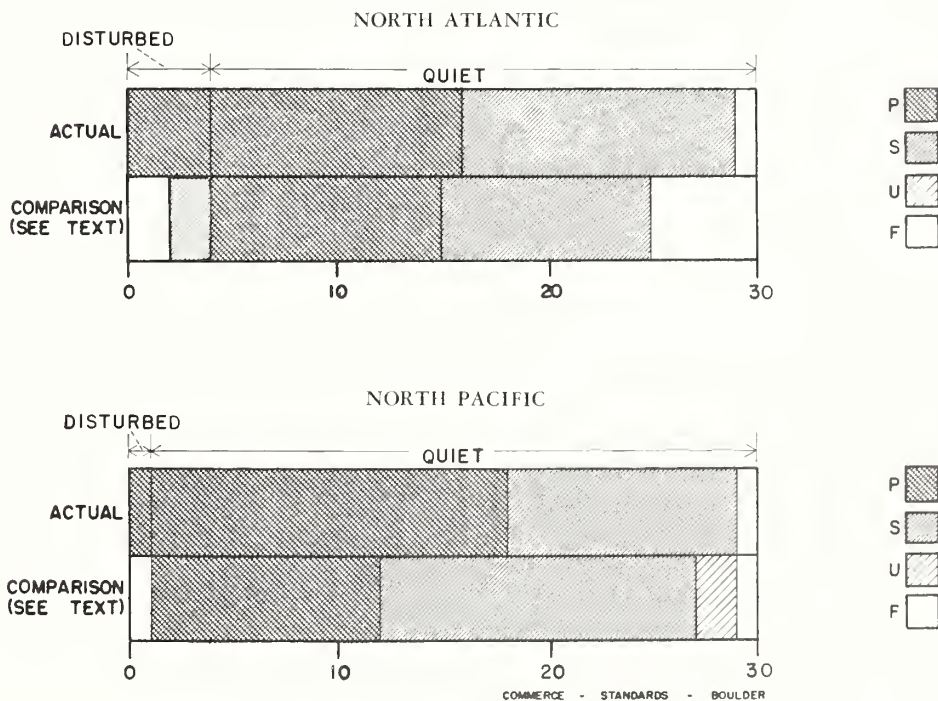
—Short-term forecast

o Quality figure

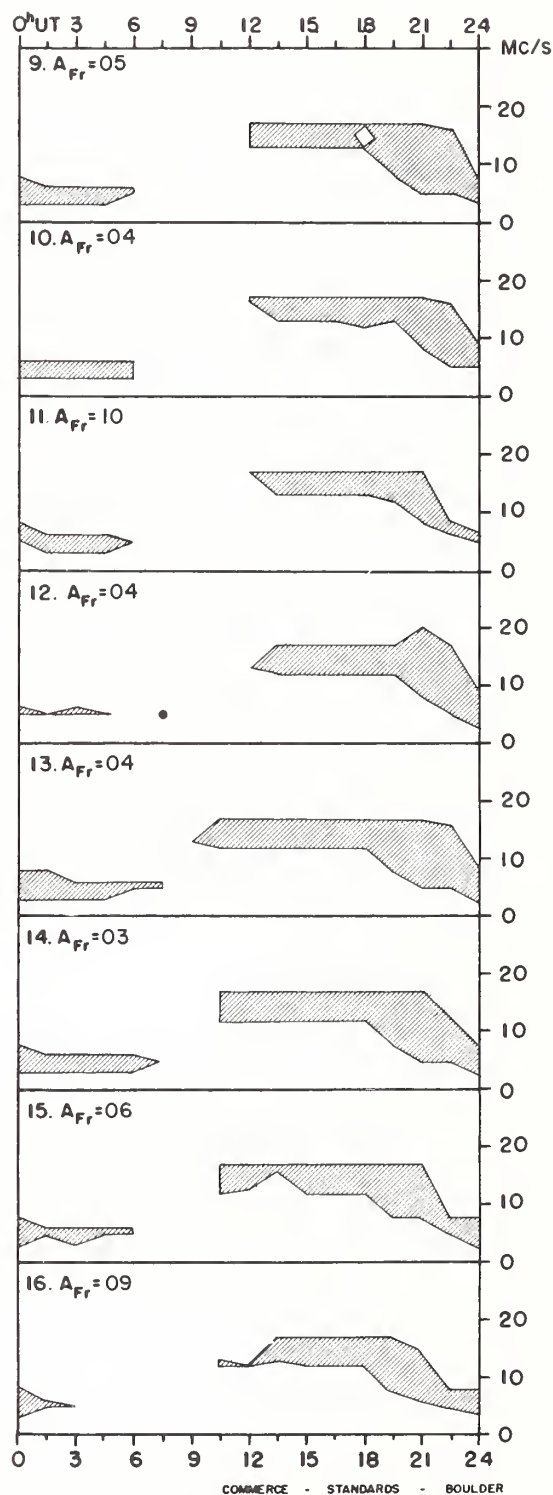
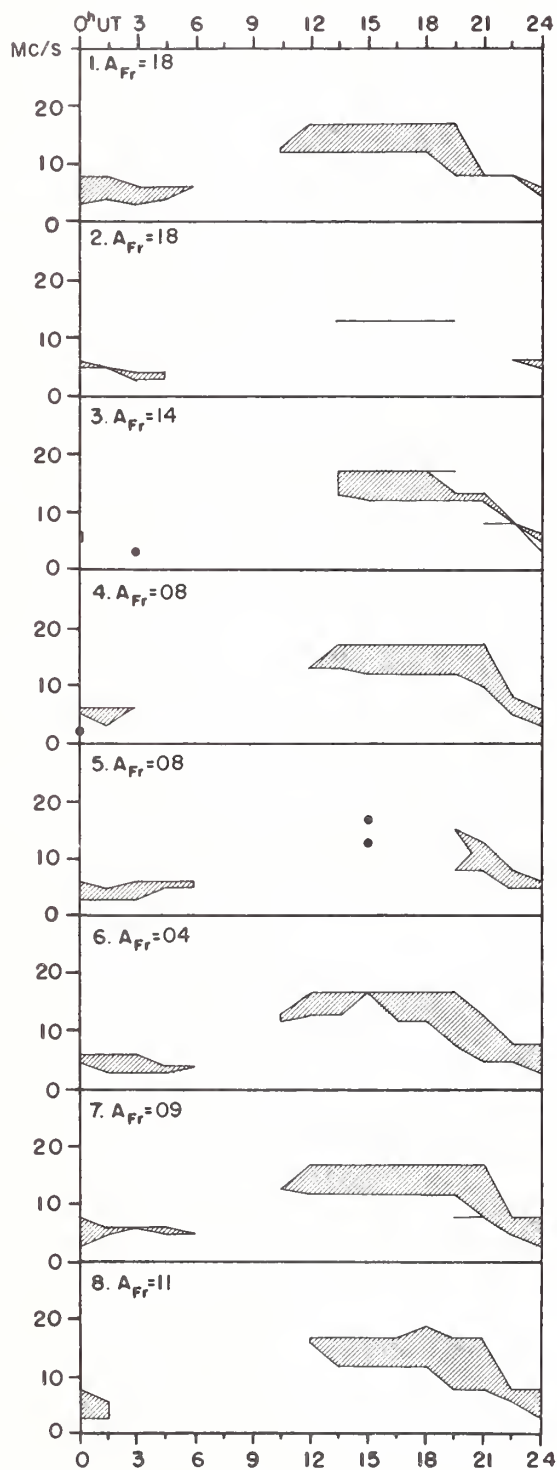
| Range of reports



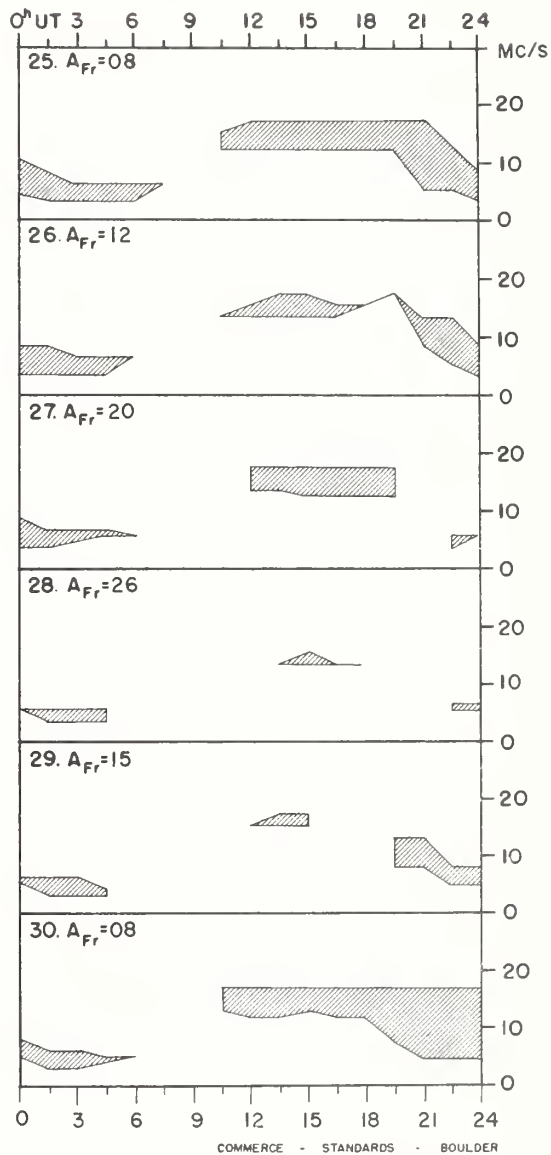
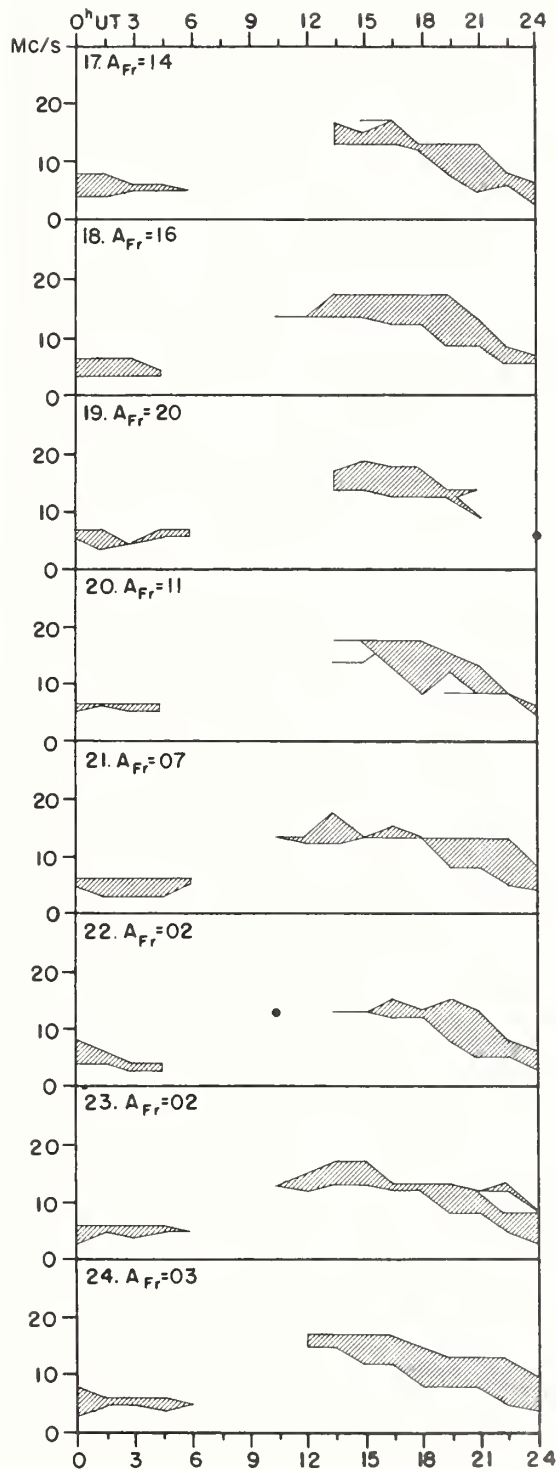
OUTCOME OF ADVANCE FORECASTS--FINAL ESTIMATES (1 TO 7 DAYS AHEAD)



APRIL 1964



APRIL 1964



Adapted from Observations by Deutsches Bundespost

IQSY ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

MAY 1964

MAY 1964	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
1	0400		65	Solar Calm	Exists	
2	0400		66	Solar Calm	Exists	
3	0400		67	Solar Calm	Exists	
9	0400		68	Magnetic Calm	Exists	
15	0400		69	Magnetic Storm	Exists	
15	1250	Ft. Belvoir, Magnetic Storm 13/12XXZ				
16	0400		70	Magnetic Storm	Exists	
20	1810	Climax, Solar Flare 20/1330Z				
24	0400		71	Magnetic Storm	Expected	
25	0400		72	Magnetic Storm	Expected	

COMMERCE - STANDARDS - BOULDER

